INFANTRY JOURNAL

Vol. XII DECEMBER, 1915 No. 4

Editorial Department.

A higher training and a[illegible]idual ability are essential today for Infantry than f[illegible]er arm. It is more difficult and it takes a longer ti[illegible]n Infantry to any standard of efficiency today tho[illegible] any other arm to a corresponding standard.

The Rôle of Infantry.

The war now raging in Europe has given rise to many new developments, which by reason of their novelty and spectacular features have occupied a prominent place in the reports published in our newspapers. Many new means of attack and defense have been developed, and as one implement develops power, a counter-agency to combat it is designed, just as we have seen the contest between armor plate and gun power continue year after year with first one in the lead and then the other. The answer to the concrete fort is the 16-inch howitzer; to the wire entanglement and the casemate, the shell; to the battleship, the submarine; to the submarine the wire net and the destroyer; and so on *ad infinitum.*

In its outward appearance, warfare of today presents a striking contrast to methods used before the days of firearms. There is so much to catch the eye in the paraphernalia of a modern army that it is not strange that many should reach the conclusion that all the former principles of warfare have been revolutionized.

Is there anything in the developments of the present war to justify this belief? If so, what modern inventions have taken the place of the means formerly employed to achieve victory?

Before the days of firearms, opposing forces came into contact with but slight delay and fought to a decision in hand-to-hand

combat. The introduction of missile weapons delayed this process to some extent, and the invention and gradual perfection of firearms opposed a much more serious obstacle to an advance. But as fire may be fought with fire, the attacking force made use of it to keep down the enemy's fire and thus permit its troops to move forward. Other means of delaying the advance were developed, such as fortifications, wire entanglements, and improved means of developing an accurate fire. The use of these obstacles has resulted in the necessity for the adoption of the means to overcome them; the greater the obstacles to an advance, the greater the necessity for special means to sweep them aside. But the advance continues to be today as always the one indispensable essential to victory. The shell sweeps aside the wire entanglement and destroys the trench, but it does so only that an advance of the infantry may be made and the issue settled in a close-range fight. As long as this is true, infantry will continue to be the principal element in an efficient army and other arms auxiliary. When it ceases to be true, warfare will no longer be possible. And the advance can only be made by the soldier who is armed with a weapon that can be carried by him.

When the steel and concrete forts of Liége, Namur, and Antwerp had crumbled away under the fire of the heavy artillery, it was none the less necessary for the attacking infantry to assault the intrenched lines between the forts, occupied by the hostile riflemen. When the heavy guns had shattered the cupolas, their usefulness in that particular operation had ended.

When we read in the official communiqué, "Only artillery duels took place," we know that no decisive action has occurred. It is as true today as it ever was that without the infantry advance, there is no victory. And no other arm has relieved the infantry of the duty of making that advance.

Φ

The Lesson of Trench Warfare.

The present apparent deadlock between the two opposing lines in France has occupied much of our interest in the European War for more than a year. The most remarkable feature of the warfare in this theater of operations is perhaps the extraordinary power of resistance of troops sheltered behind elaborate entrenchments and barbed-wire entanglements. The difficulties to

be encountered in an attempt to break this kind of a line are graphically described in the report of an observer on the western front—

The fighting at Neuve Chapelle revealed what is before the allies, if we are to enter Germany by way of the Rhine. . . .

Long and precise observation extending for perhaps many weeks must precede the big dash. To give a possible chance of a permanent gain of importance, the front attacked must be of sufficient length to enable the force which breaks through to protect its flanks and compel the withdrawal of men from trenches on either side of the gap. This means the employment of an immense number of guns, and ammunition must be poured out in a torrent. But all goes for nothing unless each gunner has his range perfect; he requires not only direction as he would if shooting down a tower, but shells must fall on exact spots. A few yards either way, and his work is largely wasted. Then it must be remembered that the target is not a long, straight line, but a line which winds and deviates like a bridle path up a steep mountain side. Every variation must be measured off. And of even greater importance and difficulty than the shelling of the trenches is the cutting of the barbed-wire entanglements which guard them at every yard. When you look at these networks and at the grim array of protected, practiced riflemen behind them, with every man fighting not only for his country, but for his very life, you might well despair of progress. But provided the artilleryman can get the range, he laughs at barbed wire. "Show me where it is," he says, "and it won't be there long." So for weeks observation goes on quietly and patiently in anticipation of the crowded and glorious hour of the supreme test. Meanwhile, sappers are burrowing as men never burrowed before. In various parts of Europe today, there are thousands of miles of little, dark, wet, dripping tunnels in which men are picking and scraping and baling with the fierce energy of devils, and ever creeping up toward the stronghold of the enemy.

Well may we hope with Colonel D'André that "this stupid method of fighting will never take root in America"——

The grand day comes. There is activity and pressure along the whole line. The men in the line to be assaulted are engaged in their routine trench life—some sleeping, some eating, some watching and singing. Except for the spluttering of rifles and the occasional clatter of a machine gun, the landscape is peaceful; not a living thing is visible. Then, with a noise which can be expressed in no old-fashioned words, hell is loosed by the attacking force. Hundreds of guns smash and boom, thousands of shells go screaming and grating on to the doomed area; simul-

taneously engineers touch buttons, and mines burst and belch. Trenches which for weeks and months had been an invulnerable sanctuary, are jolted and rocked and pounded. . . .

But this is only preliminary—

On the attacking side, the first line of trenches swarms with selected troops. . . . There is no jesting now, but only a great restlessness for the order to charge. Then the word passes, and there is a last glance at equipment and the trusty bayonet. The hideous chorus ceases as suddenly as it began; words flashing over wires give the whole machine a superhuman cohesion and precision. The command sounds up and down the crooked trenches, and on the moment, thousands of men, in the prime of their age and in the pink of physical condition, clamber over the parapet and dash for the smoking, mutilated mound which shelters the remains of their enemy. . . .

This is the first stage of the attack; the big problem is still unsolved—

The first trench is relatively easy, provided the artillery has been effective. . . . But their (*i.e.,* the attackers') lark is only beginning. Their objective is a wide, clean break right through the enemy's lines, including the reserve trenches. . . .

So there is no tarrying about the first trenches, but, leaving a force to handle the prisoners and make ready to hang on in the event of trouble ahead, the main body sweeps forward toward the defenses further back. *It is then that the casualties really begin among the attacking force.* The artillery has been possibly advised of the location of the defender's reserve lines, but there cannot be the precision and weight about the second bombardment. Provided the enemy were completely surprised, the reserve positions might be only lightly held, but half of the regular defenders of the front trenches would be taking their few days' rest near at hand, and they at least would be available and soon strongly posted. The invading artillery does its best, but the increasing volume and deadliness of the rifle fire encountered by the assaulting infantry soon make it apparent that the carrying of the second trenches, if accomplished at all, is not to be so simple and dramatic as the overwhelming of the first. Then the barbed-wire trouble is constant. The entanglement before the first line was definitely placed and fully known to the aggressors, but barricades invisible at a very short distance cross and recross the area behind, and each halt, if only for a few minutes, means sore losses to the oncoming troops. An eager mass of attackers makes an easy target to the enemy. . . . On the other hand, if men are laid on lightly, they wither away under the defenders' well-practiced fire. Then the mine fields take a heavy

toll, and each moment the defenders become more effective with their artillery, while fortified houses and villages, and occasionally woods, everywhere add to the troubles of the assault. The further the attacking force goes, the more expensive the game may easily become, until the ascendancy may pass right over to the defense, when a vigorous counter-attack will be launched.

The single chance of a big success is when the assaulting force succeeds in making a wide, clean, simultaneous conquest of the first line of trenches. No matter how many or brave the troops or how powerful the supporting artillery, the plan will fail unless the wire entanglements are thoroughly cut through. Put a handful of men behind barbed wire, and they can arrest a charge by a whole division and reduce it to a bloody rabble. If the success is only partial, as it probably will be unless the offensive is directed by genius and favored with some luck, then the ultimate gain will probably be small and paid for most dearly. Mere breaks in the line with the enemy still strong on the intervening sections means that invaluable time must be spent in routing him out, and meanwhile his reserve defenses are being perfected, and at most he will lose no more than his immediate front. The assault must know no delays; it must swing right through over a line many miles in length, and across country upon which the enemy has been for months expending his ingenuity and labor. . . .

The accuracy of this description cannot be questioned. Elaborate fortifications and barbed-wire entanglements confer on a defensive force a power of destruction that is simply enormous, provided the flanks of the position rest on impassible obstacles. This is evidently a fact of vast significance which must be seriously considered by all nations in their future preparation for war. Now that the question of national defense is earnestly occupying the attention of our people, we may ask ourselves how this new development should affect our preparations for war.

Trench warfare demands a special class of weapons and matériel. To break through a thoroughly entrenched line requires a vast number of heavy guns from four to eight inches in caliber, and an enormous supply of heavy shells, as these are the only means of destroying wire entanglements and casemates beyond the reach of light guns and rifle fire. The rifle and machine gun are of course just as important here as elsewhere, since as is apparent from the description which we have already quoted, they will come into play as soon as a breach in the front line is effected. But we are considering here the especial classes of matériel which are required for this particular kind of warfare.

For open operations in the field, the vastly greater part of this equipment is unnecessary. The rifle, the machine gun, and the light field gun are the principal weapons of the open engagement, though a certain quota of heavy guns may sometimes be added.

In our preparations for war, which of these two classes of warfare should first occupy our attention?

In view of the great power of well-defended trenches, should we not first of all equip ourselves with the special classes of matériel appropriate to that purpose? Should we not in view of their power to prevent an advance prefer these measures to those whose object is to overthrow the enemy in an open engagement? At all events, should we not provide ourselves with the large number of heavy guns necessary for continuous trench warfare at least as soon as a field army?

The adoption of this view is entirely natural, since it is a human tendency to consider that which is immediately before the eye without reflecting on that which led up to the existing condition or what may follow it. The present task is the one which naturally absorbs the attention, and in viewing the present course of operations, it is natural to place ourselves mentally in the midst of existing conditions rather than where we actually are, as regards our own problem, at the very beginning. We are likely to forget that the earlier operations in the western theater of war might have had an entirely different outcome. It is entirely possible to conceive of a more complete success on the part of the French in the mobile operations at the commencement of the war that would have relieved them from their present tremendous task of breaking the hold of their opponents. What might have happened may be conjectured from the desperate efforts which both armies made to gain the other's flank in the operations following the battle of the Marne. And we must not forget that all the advantages possessed by either side were won in open warfare.

Rather than to conclude that continuous trench warfare is an inevitable phase of any future war, should we not in our preparations make every effort to forestall the possibility of its occurrence? For with our defensive policy, the power of elaborately fortified lines favors the aggressor by enabling him to secure such a grip on the country as will be well nigh impossible to

loosen. Their power will be of value to us only as a means of limiting the degree of the enemy's success. Which of the two ways of defeating our opponent shall we prefer: a quick, decisive victory in mobile operations or the long-drawn-out and heart-breaking attempt to break his hold by the slow and uncertain methods of siege warfare? Toward which of these two ends should we primarily direct our efforts? Which method is most in accord with the principles of economy of force?

To devote a large part of our energies to the development of the enormous amount of matériel required for trench warfare before our field armies are organized and trained, is equivalent to an acceptance of defeat in that period of the war which is most decisive of the final result. Moreover, if such be the nature of our preparations, we are more than likely to be unable to make any use of them. For if we are decisively defeated in open warfare, our enemy will not be compelled to resort to trench defense but will continue his advance without opposition. We should not forget the fact that only the success of the Marne saved the French army from being driven into the Mediterranean or perhaps from absolute destruction.

There is another phase of this question that is important to us: the use of the big gun is primarily offensive, and its purpose is to effect a breach in the hostile line. It adds relatively little to the defensive power of entrenchments, which consists chiefly in wire entanglements and other obstacles as well as the trenches themselves, and in rifle, machine-gun, and light field-gun fire.

Clearly, while it may be necessary to make especial preparations for trench warfare as a possible eventuality, such preparations fall in the second line to be provided for after an efficient field army has been established. For the latter may not only enable us to achieve victory without having to undergo the ruinous losses involved in the assault of trenches but will also be indispensable to the successful conduct of trench warfare, should we be forced to resort to that class of operations; while the great mass of the large-caliber guns and other special implements appropriate for use against trenches will find no place in mobile operations.

A nation that has not provided for an efficient field army, might as well dump its money into the ocean as to expend it on a mass of matériel which possesses no value except as it assists the action of its trained forces.

Infantry Training.

There are fewer skeptics today of the necessity for training as an indispensable preliminary to successful operations in war, than there were a number of years ago. Those who have doubted, have been forced to yield to the evidence of the present war, which has tested out every system and every class of troops, trained, partially trained, and untrained. New armies that have formed from untrained recruits, have not been put into the field within a year from the date on which they were completely recruited. Observers returning from the Canadian instruction camps state that troops recruited in Canada are trained for three months before their departure and are subjected to an additional period of six months' training after their arrival in Europe. This approximately coincides with other reliable information, which is to the effect that the present period of training in England is, at a minimum, ten months and preferably one year. When we reflect that this amount of training is considered necessary with the intensive nature of the instruction given under the stress of war, what requirement must be exacted for efficiency in the calmer times of peace?

This gives us a fair idea of what may be expected of untrained troops. What were the partially trained able to accomplish at the outbreak of the war?

The Australian organizations offer a fairly typical example of a citizen soldiery as thoroughly trained in time of peace as can be expected from that class of troops. Let us hear from an observer who has followed their movements throughout the war a description of their state of readiness for operations when first assembled at the outbreak of the present conflict—

Looking back on that time when we sailed in driblets and fractions, in detachments of threes and fours, in battalions and brigades with occasional companies in between, from all corners of Australia, one sees clearly enough now, that although we spoke of the 1st Australian Division sailing, I for one had no idea of what a division was. It was no more a division than a set of wheels, pistons, nuts, cranks, cylinders, smoke-box, boiler, and one thousand other pieces stowed in the hold of a merchant ship and labelled for Australia would be a railway engine, no more than the chopped-up body of a giant lying in isolated pieces all over the ground could be called a prize-fighter. Now for the first time in history, the various parts of an Australian division

marched into Mena Camp, and fell into the places vacant for them—a brigade here, a company there, just as the missing pieces of a machine might drop first here and then there into the slots left gaping for them—and the division was assembled.

Even then we were not a division. We had assembled the component parts of a division. Arms, legs, fingers, toes had been wired into place, as they wire together the limbs of a china doll. But even then it was no more a division than a wired china doll is a living being. . . .

Finally—

almost imperceptibly, the Australian Division began to know that it was a division—that it was all one body and not merely a collection of detachments from different States and townships. It began to realize that it was a compact unit that might at any time be sent off anywhere. The signal company came to look upon itself as the nerves of that body which would have to carry messages from the brain to the limbs; the field companies came to consider themselves the fingers which would have to construct all the more intricate works that the body needed. The infantry brigades were the heavy fists and arms which were to deliver the blows for which this body exists—and so on. It is difficult to describe it very clearly, but I am not speaking of any abstraction of my own mind. I am speaking of a perfectly definite change which has gradually taken place in the minds of a great part of the units which various parts of Australia have sent across the sea during the last five months. This mental change may seem vague, but its effects are quite concrete—one sees them every day. Looking back now (February 28), it is hard to imagine that there was a time when one did not realize that the 1st Australian Division was a division—when one did not even really grasp what a division was. . . . It is hard to say how long it took for everyone to realize that the 1st Australian Division was just one fighting whole—every part depending on every other part—and making one compact Australian fighting unit, the first Australia ever put into the field. Perhaps it took a month before it really soaked in, perhaps more. . . .

Here we see taking place a gradual understanding of the meaning of organization—an idea that seems so incomprehensible to many American citizens. It may be here remarked as an aside that we have not even heard the word division mentioned in the discussion of the proposed military legislation to be submitted to Congress in its present session.

Organizational consciousness was, however, merely the first step toward efficiency—

The first big change was when the Australian Division knew it was a division. The second was the training of it to move and act. . . .

It is a fairly simple action for a man to move his little finger. It is not even a very complicated movement for him to slip his foot behind an adversary one moment, hit him heavily with his left hand the next, and follow with his right hand the moment after. But for a division of an army to make those three movements exactly in the right time and place when the arms and foot are three brigades of 4,000 men each, is a matter of intricate organization and incessant planning. For example, you have to know precisely how fast your brigades will march and what length of road each will occupy—from the foremost files to the files which bring up its tail—when it is marching. This means that you have to be sure that the men will march in steps, so many inches on an average in each pace, so many paces in each minute, so many minutes' rest each hour. There must be, as nearly as there can be, the right space between one company and another, between ammunition, mules, wagons, and water carts, between one battalion and the next. The divisional signal company must have been taught to know exactly where every brigade and its headquarters can be found at any time—where the artillery and engineers are stationed at any particular moment, so that any order can be sent to them or a report sent back from them . . . . The company commander has to be trained to know precisely what each order means when he gets it; and the company has to be trained to carry it out. All this has to happen before the brain of the division can move any particular finger, however strong its will to do so. *But it is no more use sending a division into action before that can be done than it would be to send a paralyzed man into a prize fight.*

That training has been the work of the Australian troops in Egypt. It began as soon as they had finished the preliminary work of making their camp. The troops which had reached Cairo first, were already at it before the last units had arrived. They began with training the fingers and finger-joints—the different separate parts—to do their work. Each brigade was given a square of desert, extending three or four miles from the camp. Company commanders took their men out there, and day after day for about six weeks, Sundays alone excepted, small bodies of men could be seen all over the desert, marching like a hundred small caterpillars, each in its own particular corner, extending, attacking, entrenching, re-forming. After Christmas and a certain amount of relaxation, work became harder and hours longer. . . . When at last the companies were becoming so trained to their work that further training would have meant simply tiresome marching up and down the desert—that is to say, when the fingers were fairly able to do their work—the battalion training started, etc. . . .

The above is part of an account of an observer who saw a division in the making and who is evidently trying to depict conditions in the most favorable light. The troops whose training he is describing, first saw active service on April 26, 1915, nine months after the outbreak of the war.

The lesson of all previous wars has been confirmed. *No short cut that will eliminate the necessity for thorough training has been discovered.*

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Tactics and Training.

It is a frequent occurrence in our service that when the advisability of adopting a certain tactical procedure is presented, the argument is made that "you can't do that with untrained troops, and untrained men are what we must reckon with in time of war." The effect of the acceptance of this view is to interpose an insuperable obstacle between us and any goal of efficiency we may set for our efforts.

The adoption of such a viewpoint results from a consideration of our past military history and a conclusion therefrom that as we have waged all our past wars with untrained troops (a conclusion which is in part at least erroneous), we shall continue to do so in the future. It seems impossible that those who reason from this standpoint have failed to consider the difficulties which are inseparable from the employment of untrained troops. They must have considered both sides of the question and believed that of the two alternatives, it is more practicable to obtain results with the raw material than to look for such a change in the public opinion and the military policy of the country as will permit of the training of a substantial military force.

The error in this point of view lies in the assumption that we have waged all our past wars with untrained troops. We have attempted to fight some battles with them, it is true, but we have never won a victory or attained a material result from their employment. During the war of the Revolution, although preparations on the part of the colonies began as early as 1774, we suffered a series of defeats without a single victory, although our numbers greatly exceeded those of our opponent, until the end of the year 1776. No important victory was won until late in the year 1777. The history of the first year of the war of 1812 does not disclose a single American victory. The uninterrupted series

of victories to the credit of our army in the Mexican War were not won by untrained troops. The armies with which General Scott and General Taylor won their great successes were composed of regulars and volunteers of more than six months' thorough training. In the Civil War, not a single engagement of any magnitude was fought for a year after its outbreak. The minor engagements of that period certainly do not justify the conclusion that material results can be accomplished with untrained troops.

In all these cases, there elapsed a period varying from six months to one year before the troops raised were capable of effectively participating in active operations. It would certainly be erroneous to attribute the victories won by them to the credit of untrained levies. It is likewise apparent that if we draw correct lessons from history, we must reckon upon trained troops to win our future victories as they have in the past. History seems to teach us that we can only count on defeat in operations with untrained troops. History likewise teaches us that if they are not trained at the outbreak of war, they must be given an adequate training before being launched into military operations. Shall we frame our tactics for defeat or victory?

It seems that those who rely on the teachings of history as the reason for adapting our tactics to the qualities of untrained troops have not drawn correct conclusions.

The factor that has in the past rendered possible reliance upon troops that have had no training prior to the outbreak of war, is time. In our foreign wars, our relative isolation has rendered it possible to count upon sufficient delay to permit of the training of our citizen soldiers. Today this situation is completely changed. Improvement in the means of transportation and the vast increase in transport facilities have brought us very close to other powers in point of time. Can we now, as heretofore, reckon upon the same delay that has permitted us to dispense with the peace training of our military forces? In this question lies the essence of the problem which now occupies the attention of the American people. We have enough examples in recent history of the rapid mobilization and transportation of troops to justify concern on this score.

We should be under no delusion in regard to the practicability of employing untrained troops in military operations. For there are some things that cannot be done. It is nowhere of record that a silk purse was ever made from a sow's ear.

Infantry and the Other Arms.[1]

By Colonel Baron Félix D'André, French Army.

Colonel Baron Félix D'André of the French Army was for many years military adviser to the Peruvian War Department, and as such was practically in command of the Peruvian Army. The letter from which we have reproduced the extracts which follow, was written May 1, 1915, to Colonel Alvárez, Peruvian Army, during convalescence from wounds received in action in the present theater of operations in France, and gives advice as to the policy which the author considers should control the development of the military establishment of Peru.—EDITOR.

YOU know very well what I have always said concerning the rôle and importance of infantry. . . . Only a people which has good infantry, can triumph; a people is worth what its infantry is worth. The history of peoples is a history of their infantry; when the value of the infantry diminishes, the people fall. I repeat that this is the eternal human lesson, so well taught by the eminent General Maud'huy, who commanded my brigade in St. Mihiel (9000 men) before the war and who is now commanding an army of 150,000 men (the VIIth Army). Nevertheless, this truth was challenged in Peru. To the immortal infantry, they presumed to oppose the cannon as the "King of Combat." What nonsense! Wherever the infantry is, is the country and the victory. "The cannon serves only to support an infantry combat, since the artillery is only the servant of the infantry," our artillerists taught us in 1906 in Poitiers, and this fact some people in Peru denied.

Very well—these truths have been proven in blood. It suffices to convince oneself of these truths to live in the trenches with our veterans. . . .

Yes, my friend, it is the triumph of the infantry which we have to proclaim today. It is vain to speak of ballistics and pyrotechnics. The soul stands very much above them. And in battle, it is the most resisting soul that triumphs. It must never be forgotten that the decisive victory of the Marne was won by France

[1]Translated from *Mémorial de Ejército de Chile*, September, 1915.

without heavy artillery. For my part, my regiment never knew what it was "to be supported by the cannon." I do not know where our artillery was, but we fought without its cooperation. Yes, my friend, thus it was. And nevertheless, I have never had the impression of a hostile infantry capable of resisting us. Whether in the retreat from the Woevre, at Jeandehze, the 25th of August, or covering the retreat before the battle of the Ourcq, the 1st of Semptember at Senlis, or again taking the offensive (battle of the Ourcq) on the 5th, capturing Saint Soupplets with the bayonet, or (battle of the Marne) on the 7th at Etrépilly, where I took two German machine guns, being wounded for the first time, or on the 13th at Pernant (battle of the Aisne) falling wounded for the second time, etc., I have never met infantry which pursued our retreat or could resist our advance.

And I repeat, we were not supported by the cannon, while the Krupps made ravages among us.

Very well, we have made immense progress, of course, since then, and the accord between the arms is now the accepted rule. In the union of the arms lies strength! The struggle of one arm against two is not possible. Infantry must always be supported by the cannon. On the other hand, as soon as the infantry retreats, the cannon withdraws, since artillery cannot fight against infantry. The greatest losses which the artillery sustains, occur precisely when it has to stand the shock of the hostile infantry. Very well, it is the losses which make one understand the respective value of the different arms. Of course, you know that there is no comparison between the infantry and other arms. In some infantry regiments, the losses exceed sixty per cent. As to officers, they have varied from eighty to one hundred per cent. On the other hand, the most exposed of the other arms has not had even ten per cent loss. The losses which cavalry sustained, were received in the trenches as infantry (my poor brother, a splendid cavalry leader, died fighting in the trenches as an infantryman).

A trench in which there is a good shot, is impregnable. The machine gun, served by a professional shot, is the deadly weapon *par excellence*. Fire is king. As to the other arms, the infantryman never presumes to despise any of them. Infantrymen are very pleasant and sociable, and love their comrades who serve in the special arms. They recognize the services which the latter

render them. But saying this, they do not admit, nor will they ever admit, that any arm should presume to compare itself to the infantry, since the infantry is the essence itself of the entire Nation. The infantry is the Nation! The other arms serve the Nation. Well, then, they serve the infantry. And they have their only *raison d'être* in the services which they render the infantry.

Thus it is that for our veterans of the war of 1914, the artilleryman who serves his cannon is no more useful, is of no more value, than the artilleryman who serves in an ammunition section supplying cannons, mortars, rifles, and machine guns with ammunition. Without ammunition, the armament would be useless. And the present war consumes an enormous amount of ammunition. . . . But the artilleryman who supplies the troops with ammunition, is no more useful, is of no more value (in the opinion of our veterans) than the intendent who supplies the troops with rations—since "without soup there is no troop." But the intendent is no more useful, is of no more value, than the doctor who comes to pick up the wounded and carry them to a place where he will save them (I speak of this through experience). The doctor is of no more value than the aviator who discovers and attacks the enemy; than the railroad man who transports the troops; than the valiant sapper who blows up the hostile trench. . . . To compare the artilleryman to the intendent, the doctor, etc., is then to place the truth in the right place. The opinion of our veterans is worth a gold dollar. And we ought to pick it up with veneration.

All these artillerymen, aviators, sappers, intendents, doctors, etc., are the auxiliaries of the infantry, the servants of the infantry, the mistress of the house.

Let us look at this mistress. At the same time, we shall mail to the pillory the deceitful opinion of certain interested people who wish to do a good business, by affecting to see in a war between two people, two souls, two civilizations, only a question of matériel.

Certain Germans affect to attribute their defeats to the perfection of our matériel. Honor to the 75! What an untruth! It has been equally untrue to claim that the Serbians owe their victories to their incomparable French cannon. That is forgetting the admirable energy of the Serbian infantryman who was trained

by two previous campaigns. It is forgetting the heroic action of their king in winning back Belgrade, his sacred capital. The Austrians could have had French cannon, and vice versa, the Serbians could have had Austrian guns, the victory would none the less have been on the side of the admirable Serbian infantry. No one doubts this.

The same was the case with the Japanese, in spite of their inferiority to the Russians in guns. In fact, three Japanese guns were scarcely equivalent to two of the Russians.

I am sending you an article from the *Echo de Paris* of May 4, 1915, which my wife sent me. In it, you will see the expression of the truth and the colossal expenditure of artillery ammunition which is now being made and the small results obtained. . . .

Thus it is that we have seen open cities like Nancy resist all attacks, while fortresses like Liége, Namur, Antwerp, etc., fell under the Austro-German cannon. The best wall of a fort has always been the breast of its defenders. The mobile defense of a fort (whose power lies precisely in the infantry with its two factors, fire and movement) is much stronger than the fixed defenses (whose power resides in its artillery and engineers with their single factor—fire).

Remember this great practical lesson, my Peruvian friends, and do not bury in concrete and steel the money necessary for organizing a valiant army, very mobile, having at its disposition a network of railroads and highways, platforms prepared for mortars, artillery positions prepared beforehand, and above all infantry of great value, trained in the use of the automatic rifle and the machine rifle and the machine gun, the mine, the grenade, the pick and the spade, electric wire, bayonet, etc., and above all capable of movement and tactical employment.

I do not say this to depreciate the importance of the specialist. It is necessary to have sailors who believe that without a fleet, there is no fatherland. It is indispensable to have artillerists who believe that the cannon is everything. It is useful to have engineers who have faith only in the mine and in trench warfare. But I say and affirm that a country is lost if the infantry, that is to say, the mass of the nation itself, stupidly deceived by unscrupulous and ignorant writers, has faith only in the cannon, the mine, and the distant action of a fleet, sometimes hypothetical, losing from sight the very base of its power—the infantry-

man. That is to say, that if the country has infantrymen lacking faith in themselves, combatants unskilled in combat, having faith only in the action of their neighbors, that country cannot escape final defeat.

It may be noted in the present war that the infantry is often destroyed by its own artillery. Then there are cries and recriminations on the part of the infantry thus victimized (the more violent, the closer their own artillery is to them). The infantry protests then. But I say it is very well done. Yes, very well done. For a good infantry, with expert shots, ought to be capable of destroying the hostile infantry at 300 yards at least. At that range, every uncovered enemy ought to be killed immediately. . . . From such infantry, everything can be expected; then these infantrymen ought never to permit the artillery to fire when they are within 300 meters of the hostile infantry. If the artillery attempts to support its infantry up to fifty meters from the hostile infantry (as happens here often), I repeat that it is very well done if those bad shots are torn to pieces by their own cannon. Such poor infantrymen are only a herd of sheep, food for cannon. They do not merit commiseration. A poor shot deserves only the greatest contempt.

Very well then, look out, friend Alvárez, for the multitude of imbeciles who after the war will talk only of the cannon and will see in the infantry only a herd which, supported by formidable cannon shots, is brought to the scene of action and then has only to fight with the bayonet. Imbecile butchery! Alas for Peru, if this stupid method of fighting should become implanted in the "Empire of the Sun."

As to that excellent Peruvian infantry which Colonel Sever himself in Bolivia declared to be one of the best in the world, it would be criminal to reduce it to the trivial rôle of "bayonet handles." With aimed fire and intelligent use of the ground, it can without great losses do marvels, provided its own artillery after having supported it up to the zone from 500 to 300 meters, allows it to finish its work of death without attempting to substitute for the intelligent bullet of the aimed rifle the blind ball of the shrapnel, which sprinkles the ground without distinguishing friends from enemies.

Only people in military decay can abandon to pyrotechnics that which belongs to skill and bravery. But it is necessary to perfect

that skill. It is necessary to cultivate that bravery. Consequently perfect marksmanship both in infantry and artillery fire. The latter costs a great deal, on the average one pound per projectile. Nevertheless, it is better to have no artillery than to have inexpert artillerymen. . . . The artillerymen should expend at least 100 to 150 projectiles per officer annually. But it is indispensable to take advantage of this opportunity to train the infantry to become accustomed to the fire of artillery. For the infantry is at first much terrified by so much noise, but it soon becomes accustomed to the scare, and a few days or hours after the baptism of fire, they not only laugh at shrapnel, but they are able to recognize perfectly the shot which is coming their way. By the whistle of the projectile, they recognize thoroughly whether the shell is for them or for their neighbors, and one hears them cry out, "That one is going to pass us. That one is for us. Look out!" In the last case, they take shelter in the obstacles of the terrain and protect themselves with the knapsack, making the "fish back" or the "turtle." The full knapsack affords admirable protection. I therefore advise Peru to hold no artillery firing exercises without first placing infantry in the trenches in the zone of burst of the projectiles. The infantry will be in the dead angle made by the trench and will be hit only by earth or gravel. But on the other hand, they will become thoroughly accustomed to the noise of the projectiles and will become skilled in recognizing the peculiar singing of the projectile that may be dangerous to them. In this way, Peru will kill two birds with one stone. It will not only train its artillerists, but it will strengthen its infantry, which is equivalent to a victory. Thus it will have a valiant infantry which will thoroughly understand its rôle, giving to the hostile cannon the value to which it is entitled —or the contempt if the case warrants it.

The value of the infantryman, it is not superfluous to say it again, is everything in the present war. . . .

Above all things, devote all your energies to raise above everything else the glorious rôle of infantry in modern war. In particular, do not permit the error of 1907 to continue, when all of the young men wanted to serve in the cavalry and none in the infantry, so that I could write—a remarkable state of affairs—here everyone wants to reconnoiter, discover the enemy. No one wants to fight, killing that enemy.

See what is happening with us in Europe. We are taking sergeants of all arms in order to supply officers and aspirants for commissions in the infantry. Of the 15th and 16th classes of recruits now under arms, not a man has been given to the cavalry or artillery. All serve in the infantry. The infantry is absorbing everything. It is necessary then to acquaint the infantrymen with the colossal hecatombs of dead which await them in modern war. It would be deceiving them to conceal from them the glorious danger which awaits them. They must be prepared for the future. But on the other hand, they must be given all consideration in time of peace and not receive the disdain with which they are sometimes treated. This is not a mere word—disdain. It is a fact. For I have seen, not without real sorrow, that at the graduation of the School of Chorillos in January, 1915, you had thirteen artillery officers, seven cavalry, and only six infantry.

It seems impossible! Six infantry against seven cavalry, when the true proportion would have been approximately 2 engineers, 5 artillerymen, 2 explorers (cavalry or aviation), 1 mounted infantry, and 16 infantry of the line. You see the immense progress that must be made—16 infantrymen instead of six. . . .

Australian System of Universal Training.[1]

By Captain J. W. Niesigh, Commonwealth Military Forces.

AUSTRALIA is a huge country. It has enormous wealth and illimitable resources; but, relatively, a tiny population. It is a country that is well worth having and defending. Up to the present, it has been the good fortune of Australians that their territory has not been the objective of any foe; but it has always been realised that the time might come when it would be necessary to meet an oncoming enemy, and to do this many systems and schemes have from time to time been adopted and used for longer or shorter periods, according to the varying conditions.

Australia has not been uncommon in that there have been spasms of wonderful military enthusiasm among its civilian population, alternating with such slumps as made citizen defence, as it was known in the past, a thing of small utility. That has, we think, all been changed by the introduction of the system of Universal Training for Naval and Military Defence, regarding which I have been honored with the invitation of your General Officer Commanding to give you some general explanation.

Until quite recent years, it was part of the defence scheme in the States of Australia before federation and of the National Government in the earlier days of federation, that Australia's isolation was her surest safeguard against aggression and that the worst we should have to fear in times of war would be a raiding attack by some daring enemy, seeking either to establish a naval base in one of our many deep-water unprotected harbors or seeking for coal at any of our coastal colleries or intending to hold temporarily some section of country for strategical reasons.

Developments in the East, the sudden rise to conspicuous power of at least one nation, coupled with the ever increasing ability of navies to operate far from their home ports—as very emphatically demonstrated by the voyage of the Russian Baltic Fleet from Europe to Japanese waters and, later, by the world-

[1]An address delivered at the Students' Camp, Presidio of San Francisco, July 30, 1915. Furnished through the courtesy of Maj. J. G. Harbord, 1st Cav., Commanding Camp.

tour of your own magnificent fleet of battleships under Admiral Sperry—such things as these taught us that times were changing and that with them we must change our policy.

We had hitherto relied upon the theory that Australia could only be attacked after the British Navy had been definitely worsted in distant waters, and with such reliance we provided merely small *cadre* units of artillery and engineers for the maintenance of forts and other coastal defences, and our actual defence force was created solely by voluntary enrolment of citizens, organized into units that were in some instances paid for militia service and in others received no remuneration at all.

Whenever there was a prospect of war, the ranks of these citizen units filled rapidly, and under the influence of national excitement, attendances at drill were remarkably regular; but, war being over or the threatened emergency having disappeared, the energy and enthusiasm for soldiering faded away. Consequently, there were recurring periods during which we had an establishment which, speaking truthfully, was not maintained in fact. In other words, it was not an uncommon thing for a considerable percentage of the defence force to exist in official returns only. Such condition did not make for efficiency nor provide that measure of national insurance which the wealth and pride of our country demanded.

After federation in 1901, the forces which had previously existed under independent commands in each of the States, were brought under one general control, and an entire reorganization took place. For a time, the results were eminently satisfactory, but after the excitement of the South African war and the Russo-Japanese war had abated, there was again a falling off in attendance, and considerable difficulty was experienced in recruiting. This brought us up to a period beginning about six years ago, when public opinion developed rapidly in favor of compulsory service, which thereupon formed the subject of political debate and presently became a part of government policy. A scheme was drafted by Australian officers, notably Colonel James Gordon Legge, who is now commanding the Australian troops at the Dardanelles, and was submitted to Lord Kitchener, then Commander-in-Chief in India. Lord Kitchener made an extended tour of inspection in the Commonwealth, in a large portion of which I had the honor of taking part. He furnished the Com-

monwealth Government with a report and recommendations in February, 1910; and in 1911, necessary legislation having been passed, Australia initiated the system by which the youth of the country were brought under an obligation to train for service in the naval or miltary forces. I would here interpolate that such service is specifically for home defence. Under our Defence Acts, no officer nor man may be ordered away on foreign service, and in the event of Australian troops being required for service outside Australia, they must be raised entirely by voluntary enlistment. That restriction of activities to the home-land is an important consideration in the scheme and in the national policy which is now known as "Lord Kitchener's Scheme."

Now for the scheme itself. It requires that every boy, when twelve years old, shall commence a course of approved physical training in the schools; at fourteen years of age, he has to register for service and then becomes a "Senior Cadet" and is taught elementary drill and the principles of discipline; at eighteen years, he passes into the recruit stage of the "Citizen Forces," where he remains for twelve months, learning the more advanced work of the soldier or the sailor as the case may be; and at nineteen, he becomes a full member of the "Citizen Forces"—the fighting force in case of need. He remains on the roll then until he is twenty-five years old, after which he is required, in the twenty-sixth year, to attend only a muster parade, and afterwards passes into the reserves. That is how the force is constituted. The training is so arranged that it shall not interfere to any greater extent than is absolutely necessary with the private pursuit of a civil occupation. Generally speaking, the attendance required for training is approximately only sixty-eight hours a year divided up into evening parades of one hour's duration, afternoon parades of about two hours, and what are called whole-day parades of about four hours. This training is supplemented by voluntary parades and frequently by voluntary camps. With the citizen army, that is, those over eighteen years of age, a portion of the training is continuous for ten days in camp as regards infantry and cavalry, or as we call it "light horse," and twenty-one days for scientific corps. It has been argued that this training is not sufficient to ensure efficiency, but experience has, I may safely assert, proved the contrary; more especially as the first drafts entering the citizen army had the advantage of the example and

steadying influence of the remaining personnel of the old militia regiments which, of course, had to be kept under organization until the new personnel had sufficiently developed to take its place.

Under this system, it was estimated that a fighting force of between 80,000 and 90,000 troops would be established and maintained, supplemented, as the trainees reached maturity, by an ever increasing reserve of men who had been through the ranks and passed out of them at the age of twenty-six. This estimate of numbers proved to be exceptionally conservative and is, of course, always subject to the influence of increasing population and the consequent creation of additional training areas under conditions which I will presently explain.

The plan of organization is that each of the six states shall be under the control and direction of a district commandant, who is responsible to the minister of defence and the Military Board at the federal headquarters. Each State, in turn, is divided into brigade areas and the brigade areas into battalion areas, which again are divided into training areas. In each training area, there is an area officer, generally a smart young lieutenant or captain but sometimes of higher rank. This officer is assisted by one or two noncommissioned officers of the permanent administrative and instructional staff. The battalion command is exercised in the ordinary way, and of course the brigade command, which is held by a permanently employed officer of the staff, follows in the usual course.

The relative commands are exercised upon lines laid down at headquarters and are strictly systematized throughout the Commonwealth, every training area being held responsible for the strict observance of the law and the regulations made under it.

The area officers are not permanently employed and receive a small rate of pay upon the understanding that they are following some civil occupation and that they shall only give to their military duties such personal attention as is required for the proper supervision of those under them, the bulk of the necessarily heavy office work falling upon the staff of noncommissioned officers.

The command of battalions and companies is with officers who have either transferred from the previously existing militia or who have in the first stages been specially appointed; but it is intended that, subsequently, as the scheme develops, all commis-

sions shall be filled by promotion from the ranks and entirely upon the qualification of merit.

Owing to the great distances and scattered population in a very large portion of the island continent, it has been found necessary to declare some areas exempt from training, as, you will readily understand, it would be impossible to bring trainees together in such places in sufficient numbers to teach them efficiently, and the expense of maintaining staffs to travel in the out-back country would be out of proportion to the benefits derived. Furthermore, some of the districts, such as those I have in mind, are so remote from centres of mobilisation that residents therein could not be speedily used to advantage in the case of national emergency but if required, could quickly be brought into camps of training and drilled sufficiently to form a second line of defence.

The great difficulty we had to contend with in the initial stages, was to find the area officers and the staff noncommissioned officers who were to set the ball rolling. To meet this, applications were invited from men then serving or who had served in the permanent *cadres* or the militia forces, from ex-Imperial soldiers, and others who considered themselves suited for the positions. Medical and educational tests were applied as a preliminary to weeding out the large number of applicants, and those who came through successfully, were then put into camp for six months and for that period were continuously and rigorously drilled and trained in every phase of their administrative and executive duties.

The result was eminently satisfactory, and the system has been followed from year to year as the citizen force has increased and the demand for instructors has grown proportionately.

The first school of instruction of this nature concluded in time for the training to be commenced on July 1, 1911, the enrolment of all youths between the ages of fourteen and eighteen having been commenced on January 1 of that year. Now it is necessary for every boy on reaching the age of fourteen to register on January 1 and to commence his cadet training in the following July, at which period, of course, the boys passing the eighteenth year are drafted on to the recruits.

It will interest you to know how the public took this innovation. There were, of course, opponents of the system. We had our "passive resisters," and we had some of those delightful

citizens who call themselves "conscientious objectors," but we were able to meet each case as it arose and to respect the gentleman of conscience by telling him that his son could be made a very useful soldier in several spheres which would not require him to take part in the immediate horrors, to say nothing of the dangers, of war—in other words that we could make good use of him, far from the firing line, in ordnance stores, or in a dozen different ways that it is unnecessary to detail in a camp such as yours. Numbers of boys failed to register, but it did not take long to discover who they were, because each boy who was properly performing his duties, became a policeman for his district and refused to shield by his silence his playmate or neighbor who was shirking.

In this way the rolls were quickly completed, and by the imposition of fines and their enforcement, parents soon began to realise that it was cheaper for them to see that their sons complied with the law than it was to defy constituted authority. After the enrolment, again, there were many boys who treated the whole thing as a gorgeous joke; who thought the parade ground was a playground; and who regarded area officers and staff instructors as fair butts for their juvenile wit and practical jokes. But firmness, tact, and judicious punishments eliminated these undesirable features, and undiscriminating prosecution for non-attendance at drill had a very salutary effect, although, of course, the cleaning-up process was by no means rapid. Non-attendance at drill involving inefficiency was followed by prosecution in the police courts and by the imposition of fines as well as the ordering of additional drill generally on the basis of two hours drill for every hour missed with increasing severity where the offense was repeated.

The police-court process and the imposition of monetary penalties, which fell upon parents often not able to afford the luxury of paying for their children's delinquencies, appealed to the authorities as something that could with advantage be altered, and instead of the publicity of police-court proceedings, separate courts were instituted—something in the nature of children's courts. Instead of fines, penal battalions were established in permanent encampments, and the drill shirkers were sent immediately upon conviction to those places and were kept there under very strict control, until they had performed the necessary periods

of duty and the extras imposed by the magistrate. That, perhaps, has had a more salutary effect than any other form of punishment.

Under the Act, certain exemptions necessarily are allowed, but they are not numerous. Physical incapacity, for instance, is taken into account, although with restrictions which require the individual to present himself for further medical examination at a stated time or whenever called upon. Also when a person liable for training resides more than five miles from a training place, exemption is granted. In all cases of exemption, the certificate is liable to revocation at the will of the authorities. It is right that I should explain that I have now been absent from Australia since September of last year and cannot, therefore, speak with certainty of anything that may have happened since the outbreak of the European War, but my private advices lead me to believe that Australia's participation in that war has given increased zest to the compulsory training movement, and this, following on the popularity which the scheme gathered as it developed, has made universal training a part of the national life.

Having referred to the punitive action taken in the case of recalcitrant trainees, it is apropos that I should tell you that provision is made for the protection of the trainee against hostile employers or other persons who may be desirous of interfering with those enrolled. The Act provides for adequate redress in such cases, and there has not been any hesitation on the part of the government in putting the law in motion wherever necessary. For the credit of the country, be it said, there have been few records in this regard.

Universal training is something that goes into every home. The millionaire's son has no privileges that are not enjoyed by the son of the poorest member of the community. No distinction is made; no favor is shown. Thus a condition gradually has evolved by which a lad who has not performed his military obligations, is regarded as somebody beyond the consideration and kindliness of his fellows, be it in the cricket field or the classroom, and as a person who is not deserving of the favors and smiles of the girls at a picnic or evening party.

In this way, the Army for Australian Home Defence is growing in numbers year by year and in practical efficiency day by day; so that in a few years, if the Kitchener scheme be adhered

to, we shall have an efficient force of all arms and departments. Our light horse regiments—cavalry, you would call them—are still very largely maintained on a voluntary basis, since though you can order a man to perform military service, it would be beyond reason to compel him to provide a horse. Therefore, the trainee has the option of volunteering for mounted service other than the field artillery, for which the horses are provided by the government.

It is estimated that in the event of mobilisation for war, the mounted regiments could be rapidly filled. Garrison and field artillery and engineer units are recruited from among those trainees whose civil occupations fit them particularly for those branches, and some very fine results are achieved in consequence.

I have referred almost exclusively to the military side of training, but it must be understood that the same system of training applies also to the naval service. Certain stated quotas are detailed to the Navy in the same way as are those for the Army. The naval trainees receive a proportion of their instruction on shore with occasional drills on board ship and an annual period of several days' sea-training on a specially provided vessel. The personnel of the Australian Navy is, of course, a separate organization of permanently employed men, the citizen sailors being only required as a supplement of the navy on ships which are serving in Home Waters. As some of you no doubt know, the ships of the Australian Navy are now operating in foreign waters under Imperial command.

Apart from the value of the Universal Training System for defence purposes, a moment's thought will lead you to the conclusion that it must have with it enormous social advantages for the community at large. The discipline taught in the Defence Units must be reflected in the conduct of the growing lads and young men in their homes and in the streets of their home cities. The set-up which they acquire in the course of their drill as well as the physical training, must have a marked influence on the sports grounds and playing fields of this very sports-loving country. And again the improvement in the physique and morals of the young men of the country must be handed down with ever increasing marked effect upon the national character.

In this connection, it is interesting to note that the initiation of physical training of the twelve-year-old boys in the schools

led to a popular demand for similar training for girls. Female teachers took the matter up and requested that they might be taught the drill in order to teach their pupils, and the request was readily complied with, so that now there are, perhaps, few schools in which the girls as well as the boys are not being given the advantage of physical culture. The race improvement which must be a result of such conditions in a few years when the well-trained lads marry girls who have had this physical training, cannot fail to produce a generation with exceptionally fine physical and mental qualities.

In conclusion, I would like to emphasize again the fact that the measures of defence provided in the System of Universal Training are wholly and solely for defence and not for oversea offence. Our men who are now serving abroad, are serving of their own free-will; they have nothing to do with the national training system, although I do not doubt that many of the older lads who were seventeen or eighteen years of age at the time of the initiation of that system, have volunteered and taken their places in the fighting lines.

Also I should like, as a final word, to say that I trust this explanation I have been permitted to give you of a very interesting experiment in national defence, is not intended to be in any way part of a controversy which has arisen in this country, particularly on the Pacific Coast, since I was honored with the invitation to come to your camp.

I have endeavored to tell you what Australia is doing, and, in telling you, I have flattered myself that I had a sympathetic audience because of the strong bonds of fellowship which exist, and must always exist, between you people in America and us in glorious Australia.

A Visit to Manchurian Battlefields.

By Major P. E. Pierce, 15th Infantry.

A NUMBER of the officers of the 15th U. S. Infantry stationed at Tientsin, China, made a voluntary study of the Russo-Japanese war during the winter of 1912-1913. Authority was granted six of them to visit the Manchurian battle fields during May, 1913, at their own expense. They decided to make a complete record of their experiences, each officer keeping a copy for his own benefit and a copy being furnished the General Staff and the Philippine Department for the benefit of officers who may desire to go over these historic battle grounds.

At the outset, it may be well to call attention to the fact that the success of such a visit is largely dependent on the Japanese. Horses are needed at Liaoyang, Mukden, and the Yalu, and these can only be secured through the kindness of the Japanese military officers. Therefore, these officers should be officially informed beforehand of the contemplated visit. In our case, this was done through Major General Sato, who commands the Japanese forces in North China. Everywhere we went, assistance was freely given us in the way of guides, ponies, etc. We found ourselves expected and apparently welcome visitors.

Leaving Tientsin on a German boat at daylight, May 3, we reached Dairen about daylight, May 5.

NANSHAN, MAY 5, 1913.

We arrived at the railroad station called Chinchou, near the Nanshan position, at 10.47 a. m., May 5. The following places were visited and inspected during the day:

1. The walled village of Chinchou that lies about one and one-half miles north of the main position. Traces of the sandbag cover constructed by the Russians on the walls are still visible. The east gate shows where it was blown in by the four gallant Japanese sappers—all of whom were killed by the Russians. A very good view of the terrain and of the position as seen by the advancing Japanese is obtained from the walls of the village.

2. The main Russian position. Returning to the railroad station, we had the tiffin which our boys had brought from Dairen

and at 1 o'clock started for the main Russian position. We walked practically around the whole line and returned by its rear, exploring the trenches and foreground, and yet reached the station in ample time to take the 5.06 local train back to Dairen, where we spent the night. The trenches on the hills where the ground was not cultivated, were found well preserved. All iron and wood have long since been removed. In some of the trenches were found the skeletons of their brave Russian defenders. Evidently the bodies had been lightly covered where they fell, and the bones have been exposed by the washing away of the covering.

The occupation of the walled town of Chinchou as an advanced post brought up considerable discussion. In general, advanced posts are considered inadvisable, especially when too far distant from the main defensive line to be covered effectively by its fire. Chinchou is beyond effective infantry range, and its walls gave good cover from the artillery. The loss of over 300 of its defenders (out of a total loss of about 900) only resulted in delaying the Japanese advance by a few hours and illustrates the evils of advanced posts. We shall see the same thing done and with the same results by the Russians at Liaoyang.

It was very easy from the walls of Chinchou to trace the sectors of attack of the three Japanese divisions as given in their attack orders. The various artillery positions could be located from our English maps. The fact that General Oku kept no general reserve caused much comment. The consensus of opinion was that two divisions might well have been put into the first line, and the third held under orders of the commanding general. "All commanders from the major up should keep in hand some part of his fighting units." (I. D. R., 441.)

The gun positions of the Russians can still be seen on the sky line. This, in connection with the fact that no effort was made to conceal the well-marked infantry trenches, had a serious effect on the battle. That infantry trenches should be deep, narrow, and inconspicuous (I. D. R., 490), was not appreciated at this stage of the war.

The total length of the position was about two and one-half miles. The trenches were not continuous over the entire front, but at critical points there were as many as three tiers of them. The Russians occupied the position with only the 5th Siberian

Regiment (some 3,000 effective) and artillery.[1] Many of the trenches were thus unoccupied. The fact that a defensive line so thinly occupied could hold out for an entire day against the concentrated attack of the three Japanese divisions, assisted by the fire of several gunboats from the bay to the west, seems almost beyond belief—especially when one remembers that the Russian artillery was out of action at 10.00 a. m. Three things particularly impressed us as making this possible: (1) the Russian infantry had good head cover; (2) glacis-like slopes were in front of a great part of the position; (3) the flanks rested on the sea. However, the left flank proved the weak point, as it was subject to enfilade fire from hostile gunboats. Also it had not been so strongly intrenched and occupied. As a result, the Japanese broke through here toward the close of the long day.

But a visit to this field will convince any military man that the cause of the momentous defeat of the Russians on May 27, 1904, was the incapacity of General Fock, who prevented any of the numerous reserves taking part in the fighting. The position where they stood idle all day long while 3,000 of their comrades were struggling against 50,000 Japanese, can be plainly distinguished. The greatest enemy Russia had this day, was its own commander.

The effectiveness of the modern small arm is strongly testified to by the great Japanese losses—between five and six thousand or nearly twice the number of the actual defenders.

The greatest defect of the Nanshan position was that it lay at the northern end of the narrow neck of land that connects the Kuangtung peninsula with Manchuria and had its flanks exposed to the sea. In consequence, the Japanese were able to develop a long concentric firing line and from the west enfilade the Russian position by the fire from war vessels. Some two miles to the south lies a better defensive position with flanks secure against fire from the sea. To attack this, the Japanese would have had their firing line limited to the narrow neck and could not have been helped by fire from their gunboats. It looked to us like an ideal defensive position.

The battlefield of Nanshan proved one of the most interesting we visited. It was inspected thoroughly by us during the seven hours passed there. One of the satisfactory things about this field

[1] See "Nanshan to Port Arthur," Tretyakov.

is its limited size. There is no getting lost or confused as one may well do at Liaoyang or Mukden. From the heights, the battleground lies like a panorama at one's feet.

PORT ARTHUR, MAY 6–8, 1913.

We left Dalny at 7.50, Tuesday morning, by train and reached Port Arthur at 9.20. Mr. Shimizio, an official interpreter, met and escorted us to the Yamato Hotel. At 10.10, we paid our respects to Lieut.-General Baron Fukashima, the Governor General of the Kuang Tung peninsula, and to Major-General Fukoda, his Chief of Staff. Afterwards we called on Lieut.-General Okubo, the fortress commander, and received permission to take photographs.

At 1.30 p. m., a Captain Koiso and Mr. Shimizio, the interpreter, escorted us to 203 Metre Hill and its vicinity. The trenches are still in a good state of preservation, and the approaches and parallels are plainly visible.

Relics of the conflict are still to be found on the field, in spite of the fact that the Chinese have gathered up untold quantities of bullets and larger projectiles. As at Nanshan, all wood and iron have long since been taken from the trenches.

The training of Japanese recruits on these former battlefields is worthy of remark. We saw one company of them receiving a description of the operations at 203 Meter Hill and afterwards climbing down its steep slopes where so many thousands of their predecessors had fallen gloriously.

After exploring 203 Metre Hill and its vicinity, we were driven to Forts Itsushan and Antushan. We found them in a good state of preservation.[2] The inspection of Antushan was of special value. To most of our party, it gave the first clear conception of the character and strength of the permanent works that surrounded Port Arthur. Although considerable time had been spent on a study of them, it had been difficult to understand fully all the details of their construction.

We started at 8.30 Wednesday morning for the north and east fronts. We first inspected Sungshushan, then Erhlunshan, thence drove to Wangtai and to North Fort. At the latter place, we had lunch (provided by Yamato Hotel). In the afternoon, we inspected the Panluns and the rest of the east front. We reached

[2]They had not suffered from Japanese fire.

the hotel at 5.00 p. m. after a very satisfactory day. It would be of little value to describe what we saw, as descriptions have been written much more extended and graphic than could be given here. Suffice it to say that with the British official account, one can follow all the details of the siege and trace the very footsteps of the besiegers as we did in the case of the taking of the Panluns, in which we were much interested. On arriving at the front trench of the East Panlun, we sat down and read the account of the memorable assaults of August 22-23, the sole reward of which was the taking of these two advanced positions. Maps in hand, we clambered down the front slopes through the Japanese approaches into the covering nullahs and were able to follow and to picture most vividly all the circumstances of this noted capture.

And so it was all along the line. At Chikuanshan (North Fort), we explored the counterscarp galleries where the Russians and Japanese fought under ground so many weeks. The bullet marks on the concrete walls give eloquent testimony to what occurred within them.

At 9.00 a. m., May 8, accompanied by our faithful interpreter and Captain Iono (who had replaced Captain Koiso), we drove to the museum situated to the east of Quail Hill. As we approached its entrance, firing was heard on the neighboring hills, and on inquiry we learned a Japanese battalion was receiving field training nearby. Having expressed a desire to see somewhat of this, we were taken up and introduced to the major, who then originated a combat exercise for our benefit.

There were three things especially noted during this combat exercise:

1. The advance, even at close ranges, was made by the entire firing line and therefore without covering fire.

2. The advances were made at top speed, every effort to lessen time of exposure being made.

3. Bayonets were fixed individually about 200 yards from the enemy. When the charge was sounded, the defenders rushed from cover and met the assailants half way. (This same thing has been observed at Tientsin. Whether it is tactically sound is open to question.)

4. The company was brought forward and deployed under cover. The major required his directions to be repeated by the captain.

On inquiry, we were informed that these soldiers had been in the service only four months and that the Japanese consider a training of two years necessary to make the best infantry.

The museum was interesting and instructive. We found of especial value models of Ehrlunshan and North Fort—before the siege and after it. However, the place can be inspected in an hour and a half.

From the museum, we drove to Monument Hill (Quail Hill), where we had a beautiful view. Visitors are not allowed on the sea coast line, but an excellent view of a large part of it can be had from Monument Hill. It is very doubtful that the Japanese have done much more since the war than repair these batteries. The harbor is no longer dredged, ships of more than 10,000 tons cannot now enter, and the port has lost most of its former importance—commercial as well as military. It is rumored that Port Arthur is to be abandoned, and Nanshan is to be fortified. However, we could not locate any new works being built at the latter place.

We arrived at 12.30 at General Fukashima's quarters, where we had been asked to tiffin. The hospitality extended was most cordial, and we had a delightful visit with the Governor General, his Chief of Staff, General Fukoda, and a number of others.

LIAOYANG, MAY 10–12, 1913.

We left Port Arthur on the 5.30 train the same afternoon and spent the night at Dalny. At 9.45 a. m., May 9, we started for Liaoyang. (It was advisable to return to Dairen on account of the rail connections.) We were met on arrival at 7.10 p. m., by Dr. Westwater, the famous Scotch missionary surgeon, an official interpreter, and a Japanese captain.

The following morning at 8.20, we were received by General Akiyama and after a few minutes' chat started for the Shoushanpu heights, some four miles to the south, on ponies furnished by the Japanese. From Shoushan, we rode along the line occupied by the 1st Siberian Corps, thence across the valley to the Tassu brook and over the position defended by the 3d Siberian Corps. During the ride in to Liaoyang, an inspection of General Putilov's part of the line was made.

The day's inspection proved very profitable in spite of a fifty-mile wind that made it difficult. The trenches on the hills are

still in good condition. Here again we found the British official accounts most satisfactory. By their aid, we were able to find even the emplacements of the field guns.

The lessons drawn were many. Perhaps the most striking was the method of occupying this long defensive line, especially that part across the valley of the Tassu brook. Although an apparent gap of over two miles was left, yet by withdrawing the flanks of the forces on either side and the skillful use of field artillery, this proved to be one of the strongest parts of the Russian line. Our interpreter (who was present at the battle) said the Japanese called it "the Russian fly trap." The details of the defense of the Shoushan position were especially impressive. Although some trenches were built on the crests, the main reliance was placed on those at the foot of the hills.

By the aid of the British maps, we were able to locate the advanced post occupied by a Russian battalion in front of the 3d Siberian Corps. The works are still plainly visible. The annihilation of this battalion gives another illustration of the danger run when troops are posted to the front of the main defensive line.

Sunday, May 11, was spent inspecting the inner line, of which few traces remain. We visited Forts 4 and 5. These are in a fair state of preservation and give an idea of the strength of the position. That part of the inner line was dominated by the rising ground some two to three miles distant, was evident.

A visit to the northeast wall of Liaoyang gave an excellent idea of this part of the battlefield. The breaches in the walls made by the Russians to facilitate their retreat still remain.

At 7.00 a. m., Monday, May 12, in company with a party of six British officers, we started on a goods train for Mauju Yama hill and the Yentai coal-mine region. Leaving the train at Post No. 8, we walked some four and a half miles across country to Mauju Yama, arriving at 10.10 a. m. It was raining, and the walking was very heavy.

Major Vincent of the English service, from the top of Mauju Yama, gave an excellent description of events that took place on this part of the great battlefield. He was attached to Kuroki's army and saw the battle from the neighboring heights. Through the mist, he pointed out Swallow Tail, the Five Headed Hill, the Yentai coal-mine region, and the other prominent localities made famous by this great battle.

The Japanese have marked this famous hill by a monument. The slight trenches that were dug during the battle, have largely disappeared from Mauju Yama. They can be seen on the less cultivated surrounding heights.

It is difficult to conceive how the Japanese with their inferior force could have taken and held this place. The main lesson accentuated by this visit is the fact that good infantry cannot be shot out of a position. The terrific artillery fire of the Russians upon this comparatively small hill was not accompanied by an infantry advance. It therefore accomplished little. When the place was actually assaulted, there was no supporting artillery fire, and the assailants were beaten back in every instance.

One statement of Major Vincent may well be recorded. It was that the Japanese were so exhausted by lack of food and sleep and by constant fighting, and the scarcity of ammunition was such, that if the Russians had pushed in vigorously with a single fresh brigade on the morning of September 3, the Japanese would have been driven into the river. He also said that the Japanese thought Kuropatkin began to retreat August 30, and Kuroki was under the impression that he was pursuing a beaten enemy all the time he was delivering his famous attacks to the north of the Peiho River.

After exploring the region, we returned to Liaoyang by goods train, arriving at 6.00 p. m.

Tuesday, May 13, was spent en route to the Yalu, which was reached at 5.15 p. m. This proved to be one of our most interesting and valuable days. From Liaoyang to Mukden, we were riding over ground made historic by the great struggles of the winter of 1904-05 and the spring of 1905. One of the prominent landmarks to the east of the railroad is Putilof Hill, the scene of some of the most terrific fighting the world has known. After leaving Mukden, we rode south, passing now to the east of Putilof Hill, and soon could trace on the one side the line held by the Russians, on the other that of the Japanese. With the maps, we followed the advance of the Russians down the valley toward Pensihu during the battle of the Shaho. At Pensihu, the trenches are visible on the hillsides, and the rough nature of the terrain in the neighborhood can be fully appreciated.

Shortly after leaving Pensihu, the Motienlings are passed, and thence the railroad proceeds through the valley used by Kuroki in his advance north from the Yalu during 1904.

We found the Shiangishu Hotel on the south side of the Yalu at New Wiju. It proved to be well run and comfortable. We were expected, and again ponies were furnished on our request by the Japanese officer at Antung. We started from the Antung station under the guidance of Lieutenant Kuwana with an escort of four Japanese soldiers. At 9.15 a. m., we reached the *cul-de-sac* near the village of Hamatan, where so many of the Russian rear guard were captured or killed on that fatal May 1. Relics of this engagement in the way of pieces of equipment, clothing, an occasional bullet, and human bones still cover the ground. The position of the Japanese company that blocked the retreat of the Russian rear guard, can be picked out. In fact, with the Japanese maps of Lieutenant Kuwana, we had no difficulty in understanding the thrilling episode that took place near Hamatan. The tactical lesson especially remarked was the sacrifice of the one company of the 24th Japanese Regiment in order to prevent the withdrawal of the Russians. On this small field was also illustrated the decisive results of a successful converging attack.

We rode to the Conical Hill on the Yalu from Hamatan. From this hill, the river and the adjacent positions can be clearly seen.

On our return to Antung, we passed and noted the positions in rear of the Han-tu-ho stream occupied by the Russians about 9.30 a. m., May 1, on falling back from the Yalu. Lieutenant Kuwana was wounded during the attack on this place.

Valuable lessons were learned from what we saw during this interesting day. Among these were: (1) the faulty dispositions of the Russians to meet the threatened crossing of the river (*i.e.*, dispersion and placing reserves on their right); (2) Russian guns and trenches not concealed; (3) difficulty of withdrawing field artillery when placed on the line of the infantry (especially in rough country), as shown by the capture of 22 out of 24 guns in action; (4) necessity of close communication (as shown by the Russian left uncovering the center without sending word); (5) the helplessness of artillery when caught limbered up by effective infantry fire.

We returned to Mukden at 6.50 p. m., May 15.

MUKDEN.

Once again we were indebted to the Japanese for good mounts and an escort for a trip to the North Tomb and vicinity. We

left the Yamato Hotel at Mukden at 7.15 a. m. under the care of Lieutenant Kogure and three Japanese soldiers. We reached the North Tomb at 8.30 a. m. and found it a most attractive spot. This tomb of the first Manchu emperor is surrounded by a pine forest somewhat over a mile on a side. It reminded us very much of the Adirondacks. Its chief military interest is the desperate effort made here by the Japanese to break through the Russian lines and to reach their line of communication (March 8–10, 1905). It was within the walls of the North Tomb that four Japanese battalions maintained themselves against the Russians. The Japanese broke through on the west; the Russians then had succeeded in closing the line behind them.

From North Tomb, we rode to various villages further west and finally reached Chohuatun. We were especially interested in this village, as we had made a special study of its capture by the Japanese. We were much impressed by the flat terrain, featureless except for the numerous Chinese villages and the stream west of Chohuatun. The Japanese must have fought most desperately to succeed in driving out the Russians from one village after another when the ground was frozen and devoid of cover (March, 1905).

Leaving Mukden on the 3.50 p. m. express, we reached Tientsin on Saturday, May 17, at 10.35 a. m.

CONCLUSIONS.

1. Careful study should precede a visit to the Manchurian battlefields. The following are among the books of special value: *(a)* "Reports of Russo-Japanese War" (U. S. Official Reports); *(b)* the English Accounts of Russo-Japanese War (Historical Section of General Staff; this is much better than our own reports, and the maps are especially valuable); *(c)* "From Nanshan to Port Arthur"—Tretyakov; *(d)* "The Staff Officer's Scrap Book"—Ian Hamilton; *(e)* "The Truth about Port Arthur"—Nojine; *(f)* "The German Official Accounts of the Russo-Japanese War."

2. The question of time of year to visit Manchuria is of great importance. Except for high winds on three or four days and rain May 12, we found the weather conditions excellent. It was too early for flies and mosquitoes and yet late enough for the

roads to have dried after the frost had gone. The crops were just beginning to appear. The periods in the spring from April 20 to May 20 and in the fall from October 1 to November 15 are the best in our opinion.

3. Without the assistance of the Japanese, the visit would be difficult. For instance, the securing of ponies would be almost impossible.

4. The need of a historical section of our General Staff was illustrated by our experience. Without the British Official accounts of the operations in Manchuria, our visit would have lost much of its value. The material furnished by our attachés has not been properly edited in conjunction with all other available information. We found it necessary to depend on the maps and accounts of a foreign general staff. This defect in the organization and work of our General Staff should be corrected.

5. The Japanese officer is very courteous and very punctilious. Great care should be taken by American officers to render all proper honors, both official and social.

An example will illustrate: We were surprised to see the famous General Akiyama and his staff at the railroad station at Liaoyang at 6.45 on the rainy morning we started for the Yentai coal-mine region. He had come to say good-by, as he was leaving the next day and feared he would not see us again.

6. Our experience shows the schedule adopted very satisfactory for the length of time we had available. It is thought one more day could have been profitably employed at Liaoyang and also one more at the Yalu.

7. The benefits derived by an officer from a visit to these fields after careful preparation cannot be overestimated. The English especially realize this. Several parties are sent from Tientsin each year at government expense. In addition, we met a party of six English officers who had been ordered from India to study these campaigns on the spot.

8. It is strongly recommended that our officers be encouraged to study and visit these battlefields. The payment of mileage and the expenses on the boat would induce many of them to do so. The total distance by rail is 891 miles. At seven cents, the mileage would amount to $62.37. The steamer expenses were about $15.00. If the Government would pay this $77.37, the

officer would be out of pocket only about eight dollars for his two weeks' study on the fields of these great battles and campaigns. This encouragement should also be extended to officers on duty in the Philippines. By having the "Warren" call at Port Arthur, a class of officers from the Islands could reach the battlefields of the Russo-Japanese War with a minimum of trouble and expense.

A Tactical Walk.

Patrolling.

By Capt. William H. Waldron, 29th Infantry.

ONE of the best methods of instructing noncommissioned officers in the subject of minor tactics is by means of the tactical walk. Tactical situations are presented to them for practical solution on the ground itself, and the lessons thus learned are firmly impressed on their minds.

In the regular service, this work may be carried on to advantage as a part of the company training. With respect to the National Guard organizations, it may be made to combine pleasure with instruction by arranging for a Sunday "tramp" in the country.

I doubt if there is a single company commander of the National Guard in the service today who could not carry out a scheme of this kind, had he a mind to do so.

Try it. You will be absolutely surprised at the increased knowledge of the subject of tactics that you yourself will gain. You will be surprised at the great interest that your men will take in it. You will be surprised to note how much it will raise the *esprit de corps* and the military efficiency of your company.

The successful conduct of a tactical walk depends to a great degree on the tactical knowledge of the director. Therefore, before starting out on the exercise, study up all the points that you desire to bring out. In other words, make a solution of the problem yourself and a study of the principles involved. If it is possible to do so, it is a good plan for the director actually to go over the ground before taking his noncommissioned officers over it. This, however, is not absolutely essential. You can take almost any piece of varied ground and work out minor tactics on it.

Your first essential is a problem, clearly and tersely stated, logically drawn, and easily understood. The several tactical situations should follow one another in natural sequence. Each should bring out some principle of minor tactics that it is desired to illustrate and impress upon the members of your class.

Invite a full and free discussion of all points presented during

the walk, but do not permit these discussions to degenerate into personal arguments among the members of the class. Receive the ideas of the members of the class, take out the good, and tactfully discard the bad and indifferent. Then arrive at a solution that meets the situation. Be careful that you do not unduly criticize the men, and above all, never hold up one of their solutions to ridicule. Ideas that you may not be willing to accept at first glance, may have something good hidden away in them.

In the following discussion, an endeavor will be made to state the details of the conduct of a tactical walk.

The director will have prepared copies of the problem and special situations, one for each member of the class. A sufficient number of copies of the several situations should be placed in an envelope, which is not opened until they are ready for distribution. It has been found to be an excellent scheme to typewrite the special situations on 3x5 inch cards. They are easily handled and serve the purpose much better than flimsy paper.

THE PROBLEM.

Tactical Walk—Patrolling.

Situation.

A Blue infantry force, in hostile country, has arrived at (a) and is establishing outposts along the line (b).

A force of the enemy is reported advancing from the direction of (c). Contact has not yet been established.

At (d), while the outposts are getting into position, you, Lieutenant A, are given the following instructions by the support commander at (e):

The enemy is reported advancing from the direction of (f). Our patrols will cover the (g) and the (h). You will take this patrol of (i) and proceed in the direction of (k) and find out what you can about the enemy. It is especially desired that you determine the enemy's strength and his line of advance (l).

Send your reports to (m).

Return when darkness prevents further reconnaissance.

Explanation of Letter Symbols.

(a) The point selected is the initial or starting point. It should be as close in as possible to prevent unnecessary walking and loss of time.

(b) This line should be logically selected with a view to covering the location named in (a) from the direction of the point named in (c).

(c) Some place several miles to the front.

(d) Time of starting the tactical walk.

(e) Should preferably be at the location of one of the supports of the outpost. If the point where it is desired to start the tactical walk is not suitable for the location of a support and is difficult to describe, one may say "at this point."

(f) The same place named in (c).

(g) (h) Fully describe the routes of any other patrols that are being sent out from the outpost line. If the routes have local names, use them. If they can be seen from where you stand, point them out.

(i) Designate the number of men that the patrol is to contain; as, "so many noncommissioned officers and so many privates." This number will be determined by the mission of the patrol and the number of messages that it will have to send back. It is well occasionally to frame a problem and fix the strength of the patrol at a lower number than is necessary to conduct the work properly. On the other hand, it may be well to fix the strength greater than is necessary. These two courses bring before the class the necessity for having sufficient men to accomplish the object, while on the other hand a surplus is only a burden.

(k) Some intermediate point between (c) and (e).

(l) It may be desirable to vary the problem by directing the patrol to proceed to some definite point with some definite object in view; as the examination of a bridge, location of a bivouac for the night, reconnaissance of a village or group of houses, etc., in which case the several sentences of the problem would have to be changed accordingly.

(m) This is generally to "support No. —" or to "this point."

It should be understood that the above is only one problem, a mere type as it were. The wording must be varied from time to time and would naturally have to be varied to suit the particular terrain over which it is intended to operate.

Officers and noncommissioned officers solving the problem should be equipped as follows:

Writing pad (paper should be of uniform size to facilitate handling; the ordinary pads about 5x8 inches are best);

Pencils;

Field glass;

Compass and watch;

Book of message blanks;

Map of the terrain over which the walk is to be conducted.

We shall now take up in detail the conduct of the walk.

The party proceeds to the point designated in the problem as (e), where the situation is handed out by the director, a copy to each member of the class. Some ten minutes should be allowed for study of the problem and to enable the participants to orient themselves. The director should point out the location of the outpost line, explain that each member of the class should throughout the exercise consider himself as Lieutenant A, and make any explanation of the problem that may be necessary.

After satisfying himself that all are familiar with the problem, the director hands a copy of the first requirement to each member of the class. All of the requirements that it is intended to submit for solution, should have been prepared beforehand and written out on cards so that they may be passed around.

1st Requirement:

What are the duties of Lieutenant A before starting out with his patrol?

The director then calls upon the members of the class to make a memorandum on their pads stating briefly just what they would do if actually confronted with the situation before them.

Some fifteen minutes should be allowed for the solution of this requirement, at the end of which the solutions are collected by the director, who selects several at random and reads them to the class, making any comments that may be pertinent.

The solutions submitted are then returned to the members of the class, care being taken to see that no member gets his own solution back again. This is done with a view to letting members see how others are solving the problem.

This accomplished, the director takes up the subject in detail and explains the several duties of a patrol commander before starting out with his patrol, as follows:

Lieutenant A would—

1. Make an inspection of his patrol, satisfying himself that the

members are in suitable condition for the duty to be performed;

2. See that each man is properly armed and has the proper amount of ammunition and that none are sick, footsore, or intoxicated;

3. Insure himself that the accouterments are so arranged as not to glisten in the sunlight nor rattle when the men walk or move;

4. In the presence of the officer sending out the patrol, repeat his orders or instructions to the members of the patrol, stating his general plan for carrying them out, and assure himself that every man understands them;

5. If the men are not already familiar with them, explain the signals by which the members of the patrol are to communicate with each other;

6. Impress upon the members of the patrol the necessity for concealment, warn them about firing their pieces, and caution them that they must neither talk nor smoke;

7. Designate a place of assembly for men who become detached from the patrol;

8. Compare his watch with that of the officer sending out the patrol and designate a member of the patrol to take charge in case an accident befalls him.

Members of the class should be given an opportunity to ask questions and discuss any phase of the solution. The next requirement should not be taken up until the director is fully satisfied that every man in the class thoroughly understands, in all its details, the requirement under consideration.

The class then proceeds to the front.

After having walked a couple of hundred yards, the class is halted, and situation and requirement No. 2 are given out verbally by the director as follows:

Situation No. 2.

At this point is posted outguard No. — of the support that we have just left. The sentinel post is over there (pointing in the direction and indicating the supposed position of the sentinel).

Required: The action you would take as patrol leader.

The director puts the question to a member of the class and requires him to state orally his answer. The same question may be put to other members, even if the first answer is correct, by asking, "What would you do, Sergeant —?" or, "Sergeant —, do you think Corporal — has met the situation properly?"

The director will then proceed to bring out the point that when a patrol is sent out from a support, the leader should, when he

passes the line of outguards, notify the outguard commander nearest his line of advance of the fact that he is going out towards the enemy, indicating to him the general direction in which he intends to advance and getting any information of the enemy that the outguard commander may have. After these points have been thoroughly impressed upon the members of the class, they proceed to the front.

After having advanced from 800 to 1000 yards from the outguard, the class is halted, and situation and requirement No. 3 is given out:

Situation No. 3.

You, yourself, as patrol leader, have arrived at this point. Contact with the enemy has not been gained.

Required: What is the formation of your patrol at this moment?

The director will explain that it is desired that each member of the class make an examination of the terrain in the vicinity, get his place as patrol leader definitely located, and then decide upon the exact point where each member of the patrol is at that moment. Each man will make a rough sketch, showing the disposition decided upon. At least fifteen minutes will be allowed for this purpose, after which the class will be assembled and the members required to state orally the disposition of the patrol, using, if necessary, the sketch that has been prepared for reference. After having several members of the class go through this process, the director will take up the subject in detail, and applying the general principles of the methods of advancing a patrol to the front, locate each member of the patrol.

It is impossible to lay down any hard and fast rule for the conduct of a patrol. Each situation has to be worked out by itself. Each solution will vary with the topography of the country over which you are passing. A few general principles may, however, be enunciated.

The patrol leader, as he advances towards his objective, will mentally make note of various intermediate objectives, to serve as stepping stones for his further advance. He can never be certain that he will not encounter the enemy and must be prepared at all times for such an event.

If the patrol advances in one body, a hostile patrol will allow them to approach and then ambuscade and capture them. If the

patrol advances in an extended line, capture is rendered much more difficult, but each man will be acting more or less independently, and it will be most difficult for the patrol leader to control the operations.

A patrol should assume the general formation of a column on the march, *i.e.*, there is an advance guard, a main body, flankers, and a rear guard. These several elements may be represented by only one man, but the principle is exactly the same. The advance man is necessary to give warning of the approach of the enemy. The flankers are necessary to watch towards the flanks and prevent the enemy from ambuscading the patrol or working around its rear unobserved and cutting off its line of retreat. The main body is necessary to back up the advance man and protect him, and the rear man is the "get-away-man," so that in case the patrol is fired into or captured at least one man has a good chance to escape and carry the news back to the support commander. It should always be remembered that a patrol that goes out and does not return or is not heard from in a reasonable time, causes great uneasiness and apprehension back at the outpost line.

Some authorities advocate that the patrol leader should march as the advance man of the patrol. This is not believed to be good tactics. He should be centrally located so that he can control the operations of his patrol.

When a small patrol is advancing along a road which is more or less winding and has brush and trees along the side, it is believed that the "Boni Point" formation will usually meet the requirements. In this formation, the leading man walks along the side of the road close up to the brush. The next man follows him at a distance of about twenty-five yards, walking on the opposite side of the road. The remaining men of the patrol follow at varying distances on alternate sides of the road. The rear or "get-away-man" should march at least seventy-five yards in rear of his next preceding man. Flankers are sent out when necessary.

You will be surprised to see how admirably this formation will meet the situation under the conditions stated. The next time you are out on a winding road in the woods, step over to one side of the road and observe to the front. Then go to the other side and repeat the operation. You will find that from one side your view will be very much restricted, while that from the opposite

side will be much more extended. One trial will doubtless convince you of the suitability of this formation.

Having brought out all the tactical points involved in the formation of the patrol and arrived at a reasonable solution to requirement No. 3, the class advances to the front. The director will caution the men to observe the terrain as they proceed and bring up for discussion any point that may occur to them.

Having advanced a few hundred yards to the front, the class is halted and requirement and situation No. 4 are given out—

Situation No. 4.

You, yourself, have arrived at this point. You observe that your leading man has halted and is holding his rifle horizontally above his head, indicating that he has observed the enemy in small force. You join him and discover a detachment of several dismounted men of the enemy advancing down the road in patrol formation. They are now at that point (the director indicating to the members of the class the point).

Required: What action do you take?

The director allows a few minutes for the members of the class to look over the situation and inquires if there are any questions that any one desires to ask. All points of the situation that are not clearly understood, should be made plain at this time. The director will decide upon and point out the position of each member of the patrol at this moment so that all members of the class will solve the problem on the same assumption. The men are then instructed to make an examination of the ground and draft a rough memorandum showing what they would do to meet the situation. Ten to fifteen minutes are ordinarily sufficient for this purpose.

The ground for this situation should be selected at a point where there is some cover available for the patrol not too far from the road.

Some pretty definite rules can be laid down to cover a situation of this kind, but at the same time, there are tactical questions involved on which no specific rules can be given.

Now this is a reconnoitering patrol. Its duty is to get information of the enemy's strength and his line of advance. The first question that will present itself to the patrol leader is whether he will endeavor to capture the hostile patrol or whether he will avoid it. The capture of an entire patrol that is advancing in

proper formation, is a most difficult operation. One may almost say that it cannot be accomplished without firing. The noise thus created will doubtless be heard by the enemy, and he will take further precautions by sending out stronger covering detachments and thus create a screen that it will be impossible for our small patrol to break through. This hostile patrol has not yet gained any information worth while, and the combat patrols that will be sent out from our outpost line, will delay their operations considerably. The decision on this point will then be to avoid the enemy's patrol and let it proceed unmolested, if it will do so.

The patrol leader will next have to consider the question as to whether or not he will attempt to get information back to the support commander to the effect that he has observed the enemy's patrol and that they are advancing towards the outpost line. This is only a small detachment of the enemy. It may be a reconnoitering patrol, out on the same mission on which our patrol is engaged. It may be the point of the advance guard of a column advancing towards the outpost. It may be a combat patrol covering the enemy's outpost line. At this moment, its character cannot be definitely determined. If it is a reconnoitering patrol, our own combat patrols should be able to prevent its securing any information of value regarding our outpost line. If it is the advance element of a column on the march, that fact will be disclosed in a very few minutes, in which case our reconnoitering patrol will probably change its character to that of a combat patrol and do all in its power to delay the advance and by firing give warning of the approach of the enemy. If it is a combat patrol and discovers our patrol, it will endeavor to drive it back, and the firing will give the alarm to our outposts. Any information that our patrol could send back at this time would be of little, if any, value. The decision is, therefore, that no message will be sent back until something more definite is learned.

After the class has had an opportunity to study the situation, the director selects a member and inquires of him, "Sergeant —, what would you do under the circumstances?" After the sergeant has given his ideas, then another member is asked, "Corporal —, what do you think of that solution of the problem?" and so on until it is fixed in the minds of the men just what they ought to do. During this discussion, the director should ask questions to bring out the principles hereinbefore enunciated and

should explain to the men why the action taken is decided upon.

Having decided to avoid the enemy's patrol, we now take up the question as to just exactly how this is to be done. The director will question the men and get their ideas on the subject. He will receive evasive answers. He will have answers that are radically wrong. He will have answers that are good and show a great resourcefulness. He must try to impress the men with the fact that the situation is as stated in the problem and that they must draw upon their imagination to see the disposition of our patrol and that of the enemy. Here is a real situation. How are you going to meet it? How would you meet it, if that patrol out in front were real and had real rifles with real bullets in their cartridges? The chances are that the untrained man would follow the line of least resistance and fall back on the outpost line or open fire on the patrol.

We must give the enemy's patrol credit for being on the alert and for having such a knowledge of tactics that he will do the proper thing. If he sees one member of our patrol, the difficulty of avoiding him will be doubly increased. Our task, then, is to get to cover as quickly as possible. It is this seemingly trivial action that sometimes calls for all the ingenuity that the patrol leader may possess. The road may be open for a considerable distance so that if one of the members of our patrol tries to cross from one side to the other, he will be seen and the position disclosed to the enemy. It may be necessary for the patrol to fall back a short distance in order to secure the necessary cover. It may be necessary, in order to avoid discovery, to direct all men on one side of the road to take cover on their side and the remainder to seek cover on the opposite side. In this event, instructions as to where the patrol will get together again will have to be given. Meanwhile, the enemy's patrol is advancing down the road. The director will point out to the class and dwell upon the principle that having decided to avoid the enemy's patrol, the all-absorbing duty of the patrol leader is to conceal his patrol so that the enemy will have no information that it is anywhere in the vicinity. The measure to be taken to accomplish this will then be worked out in the minutest detail.

Having decided upon the measures necessary to be taken to avoid the enemy's patrol, the director will next take up the subject as to whether or not a message is to be sent back at this time.

Explain the principles hereinbefore stated. This is an excellent opportunity for you to make a short talk on the subject of messages in general and under the circumstances of this situation in particular. If any member of the class insists that a message should be sent, have him write it, then take his message and imagine yourself the support commander who has received it. Ask yourself if there is anything in it that will materially assist you in the defense of the outpost line. Do not hold up the message to ridicule, no matter how bad it may be, but dissect it and show the men, if such be the case, that there is nothing of importance in it—nothing that would assist the support commander in concealing or defending his outpost line. If it is found on a critical examination that there is information of importance, do not hestitate to say so. Give a man credit for every reasonable idea that he is able to produce.

Having exhausted the subject of the gaining of contact with the enemy and the question of messages under the circumstances stated in this situation, the class again advances to the front.

After having moved a suitable distance, the patrol is halted, and the following situation and requirement is handed out:

Situation No. 5.

The patrol successfully evaded the enemy's patrol, which marched down the road towards the outpost line. The patrol has been assembled and is continuing its advance to the front. On arriving at this point you observe a force of the enemy marching into that cleared field (the director indicates). They are apparently going into bivouac. Small detachments, which you estimate to be outpost troops, are being pushed out in your direction. You estimate the enemy's force to be a regiment of infantry. At this moment you hear firing to your rear, in the direction of your outpost line.

Required: What action do you take?

The assumed location of the enemy should be from 1,200 yards to one mile distant from the point where the patrol is halted. It may be straight to the front, or it may be in an oblique direction. The disposition of the patrol should be again pointed out so that each member of the class will make his solution on the same basis.

About ten minutes should be allowed for the men to study the situation and get it firmly fixed in their minds. The director then,

as before explained, proceeds to question the men as to the action that they would take. The subject will be taken up in the following sequence:

1. The disposition of the members of the patrol.
   (a) For observation of the enemy.
   (b) To prevent surprise.
2. The advisability of sending back a message.
3. The contents of the message.
4. The precautions to be taken to insure the delivery of the message.
5. The significance of the firing to the rear.
6. Precautions to be taken to prevent the enemy from receiving messages from his patrol.

When the patrol has encountered the enemy, the disposition must be such as to permit the leader to observe the hostile force for the purpose of forming an estimate of its strength and composition, dispositions, and probable intentions. With this end in view, the leader must get to a vantage point from which he may obtain a good view of the enemy. The remaining members of the patrol must be so disposed as to guard all the avenues of approach from the known direction of the enemy's forces, in order to prevent surprise. Having in mind these points, this phase of the situation will be worked out in detail on the ground, and a solution arrived at.

The next question for consideration is whether or not a message should be sent back. This is the first force of hostile troops of any consequence that the patrol has observed, and although it is apparently one regiment of infantry, it may be only a detachment of a much larger force. Other patrols may locate other forces of the enemy, and from all the reports sent in to the several supports of the outpost and transmitted by the commanders thereof to the commander of the main body, a pretty clear estimate of the strength and composition of the whole force may be arrived at. It is therefore important that a message be sent back.

The contents of the message will now engage your consideration. You will require the members of the class to sit down and each write out the message that he would send.

After all of the men have written their messages, collect them and read a few at random. Then pass them around to the mem-

bers of the class, being particular to see that no man gets his own message. By following this scheme, the men are kept on their mettle through knowledge of the fact that their work is being viséed by their comrades.

Now take up the message in detail. Call attention to the requirement that the heading of the message should be carefully filled in with all the data required, especially the location from which the message is sent, and that it must be clear and concise. The address to which the message is sent, should be clear and unmistakable. The body will contain the information gained regarding the enemy, together with a statement of the patrol commander's future intentions. In this case, the body of the message would probably read as follows:

I have observed a force of the enemy, estimated as a regiment of infantry, going into bivouac at — (here give concise location of the place where the enemy is bivouacking). His outposts are being established along the — (describe as accurately as possible where the outposts are being established). A hostile patrol of — men passed my patrol at — and advanced in the direction of your outpost line. I will remain here in observation until forced to retire or darkness prevents further reconnaissance.

The director will work out this message, word by word, impress all the elements of it firmly on the men, and after a full discussion of the subject, pass on to the next requirement.

Addressing a member of the class, the director propounds the question, "Sergeant —, how would you get this message back to the support commander?" After receiving the sergeant's solution, "Corporal —, what precautions do you think should be taken to insure the delivery of the message?" Then to another: "Corporal —, what do you think of that solution of the problem?" After having gotten the ideas of several of the men, the director will take up the subject of the transmission of messages by messenger.

It is well known that there is at least one patrol of the enemy operating in the country lying between the point where the patrol is halted and the outpost line. There may be others who have eluded our patrol. If the latter be the case, they will be on the lookout to prevent any information from our patrol from getting back to our outposts, so that extraordinary precautions will have to be taken by the messenger in order to insure the delivery of

the message. Under the circumstances, it is thought that the message should be sent back by at least two messengers along different routes. They will be given the general direction that each is to follow. They will be apprised of the contents of the message and impressed with the importance of the information contained therein and with the necessity for taking precautions to insure its delivery. (Note—An entire tactical walk may be devised and conducted on this simple problem of getting a message back from the patrol to the outpost. By throwing a number of obstacles in the way of the messenger, it can be made most interesting.)

After having exhausted this subject and arrived at a decision to send the message back by two messengers, the director will proceed to the next phase of the requirement, which involves a discussion of the significance of the firing to the rear. This will be brought out by questioning members of the class to get their ideas of what is going on and will be followed by a short talk on the employment of combat patrols sent out from the outpost to beat off small patrols and keep them from developing the position.

The next requirement of the problem involves the subject of just what precautions the patrol leader will take to prevent members of the enemy's patrol from getting back to their own force with information. Proceed along the same line of questioning as heretofore indicated. Follow this with a thorough discussion of just what you would do. Do not deal in glittering generalities, but pin the men down to a statement of just what they would do.

If only the one patrol is operating in our rear and our patrol has not been seen by any of the enemy, it is pretty safe to estimate that any messenger will take the line of least resistance and follow the road pretty closely in going back to his own troops. On the other hand, if another patrol of the enemy has eluded our patrol and knows that it is in its rear, it will avoid the main avenues and endeavor to get messages back by making use of all available cover.

As far as possible, the patrol leader will dispose his men so as to cover all avenues of approach to the enemy's bivouac. The direction of the firing that has been heard, will serve somewhat as a guide as to the scope of the operations of the enemy's patrol. Just where the men will be stationed for observation, will have

to be determined from the lay of the ground and will have to be worked out in detail on the ground itself.

The class will now pass on to the next situation and requirement:

Situation No. 6.

You are still observing the enemy. Nothing has happened to cause you to change your estimate of his strength and composition. His outposts are being established, and he is pushing out patrols to his front and flanks. Your position is rapidly becoming untenable. The firing to your rear has diminished until there is only a shot now and then. The sentinel you have posted to watch the road (the director indicates position) signals "enemy in sight in small numbers" and points in the direction of the road.

Required: What action do you take?

The director will proceed with the solution as hereinbefore indicated by questioning the members of the class and in a discussion of the situation bring out the following points:

The patrol leader has accomplished his mission, in so far as the main body of the enemy is concerned. He has located his bivouac, where he apparently intends to spend the night. He has seen his outpost established. He has ascertained his strength and composition. The advance of hostile patrols is rendering his present position untenable. It would be of little advantage for him to attempt to remain out so far to the front and take the chances of being surrounded and captured by superior numbers. The signal from the sentinel watching the road indicates that a part of the hostile patrol is advancing towards him, and it is probable that they are bearing a message giving information of our own forces that will be of great value to the enemy.

After having brought out these points, the director announces the following decision:

1. Leave one man with orders to observe the enemy and the advance of his patrols, and when compelled to do so, to fall back on the main body of the patrol.

2. Signal the other members of the patrol that the enemy is in sight and point in his direction. Signal them to fall back and conform to the movements of the leader.

3. Take the remaining members of the patrol, if there be any, and join the man who signaled "enemy in sight."

The director will explain how these signals may be given. The

members of the class will be required to work out the details of the route by which the patrol leader will join the sentinel observing the road and will conduct the class to the point assumed to be occupied by the sentinel, where the next situation is given out:

Situation No. 7.

You and one other member of your patrol have joined the sentinel watching the road. He points out the enemy he has observed. On examination, you find that two men of the enemy are advancing at a rapid walk, one on each side of the road, with a distance of about fifty yards between them. They are about 600 yards distant at this time.

Required: What action do you take?

The director will question members of the class to get their ideas of the measures necessary to meet the situation. The points to be brought out are that the men are probably carrying back important information to their own commander. To prevent the accomplishment of this mission now becomes the supreme duty of the patrol commander. In other words, the two men must be captured. The method of accomplishing this must be worked out on the ground. In this case, it is desirable to effect the capture at as great a distance as possible from the patrols that are being pushed out from the enemy's main body. Our patrol leader will advance down the road under cover as far as possible before holding up the two men. He should be able to reach a point at least 200 yards further down the road. If practicable, the capture should be effected without firing to avoid giving warning to the enemy's patrol operating in the direction of our outpost as they would otherwise infer that their messengers are in difficulties and would probably send back another message by a different route. Furthermore, firing at this time would give the alarm to the hostile patrols operating from the main body, and they would rush to the rescue of their comrades.

It is a general rule in the attempt to capture members of a patrol that the situation we desire to produce when we meet them, is that they should be marching and that we should be halted. By adopting this method, we form an ambuscade. In this particular case, the patrol leader will gain a point where his two men will be stationed alongside of the road about 50 yards apart so that the two scouts of the enemy can be held up simultaneously and compelled to surrender.

It is thought that the situations herein stated will consume a full afternoon for their solution and will be about all that the average noncommissioned officer will be able to assimilate at one session.

However, there are many other points that may be included in this tactical walk, as:

1. The exact method to be employed in the capture of the men of the enemy's patrol, who are walking down the road.
2. How they are to be searched for a message.
3. What questions are you going to ask them?
4. What are you going to do with them?
5. What precautions you are going to take—
   (a) To prevent their escape while being taken back?
   (b) To elude the remaining men of the enemy's patrol?
6. The question of sending back information of the enemy's patrols so that the support commander may send out combat patrols to oppose them.
7. Will you now turn your patrol into a combat patrol or will you endeavor to capture the remaining members of the enemy's patrol to prevent their sending back any information that they may have gained?

These problems may be gotten up in the shape of situations and proposed for solution.

This same method of instruction may be employed in all the subjects included in minor tactics, and it is believed to be the best so far devised.

If this article has induced you to give this system a fair trial, it will have served its purpose, for it is believed that if it is once used, all other methods will be discarded in its favor.

Collective Effect of the Battle Sight.

By Capt. G. Soulard Turner, Signal Corps (Inf.).

THE present battle sight is not the best sight that can be devised for its purpose; hence discussion looking towards its improvement should be encouraged. It is necessary, however, that such discussion be based on a thorough understanding of the powers and limitations of the sight, and the object for which it was designed. This has not always been the case in the past, and too frequently have criticisms of the battle sight indicated that its powers, its limitations, and its functions have either not been thoroughly understood or have been ignored; thus erroneous conclusions regarding its value have been drawn.

In proof of this statement, consider one of the faults that is most commonly attributed to the sight—its failure to shoot where it is held; that is, when used individually at the shorter ranges, to hit the target, aim must be taken below it. To condemn the battle sight as such on this ground indicates a lack of appreciation of the elemental purpose for which it was designed. This sight was not primarily devised for individual work at short range, and therefore to expect a high degree of proficiency under the circumstances is like expecting the same degree of accuracy in a grocer's as in an apothecary's scale. To condemn the battle sight as such because it will not do work for which it was not primarily designed is manifestly unfair.

Whether a sight is needed for individual work at short range is another question, the answer to which is to be determined by a study of conditions only partially related to the battle sight. It is believed that such a sight is needed and that in the secondary purpose of the battle sight, this need is partially supplied. However, one thing is certain: it is mechanically impossible to provide one fixed sight that will shoot "to the mark" at short and also at long ranges. If the best interests of the service demand the meeting of both these requirements, and it is believed they do, then there must be two sights—not one—in addition to the leaf sight.

But to return to collective effects. The battle sight is not only condemned because it fails to function as a leaf sight at the short ranges, but it is also condemned as a battle sight proper. Apparently, some critics believe that a group firing with this sight places a sheaf of bullets in a beautiful curve just over the top of the

target. Before accepting this supposition as a fact, it would be well to study the effect of the sight when used collectively. Such a study will prove that the powers and limitations of the battle sight are sometimes misunderstood.

Why there should be a misconception regarding this subject, it is difficult to say. Perhaps it is due to the fact that under the old target regulations, and to some extent under the new, there has been so much individual firing with the battle sight under conditions different from those for which it was designed; and perhaps there have been few opportunities to study its effect when used as it was intended to be used.

Before proceeding further, let it be understood that while many things may be said in favor of the present sight, the facts herein set forth are not advanced as an argument for its retention. Rather, they are presented with the idea that a study of the effect produced by its use will help to determine just what may be expected from a fixed sight, and so lead to demands for a device that will best meet the needs of actual warfare.

The principles involved in the computations which follow, are promulgated by the War Department through the Leavenworth schools, and the data upon which they are based, except where noted, will be found in War Department publications.

In studying the effect of the battle sight, it is necessary to bear in mind that extensive experiments have proved the average range to be 436 yards, instead of 547 yards as commonly stated.[1] The summit, or greatest height of its trajectory, lies approximately 233 yards from the muzzle.[2] In other words, at a point 233 yards from the muzzle, the bullet will pass approximately 17.76 inches above the line of sight, and at no point will it be higher. The height at other ranges is as follows.[3]

Range	Height above or below point of aim in inches
200	+17.04
300	+15.84
400	+ 6.12
500	−13.68
550	−24.78

[1] Page 6, "Regulations Prescribing Standard for Field Firing and the Proficiency Test," W. D., 1911.

[2] Computed by interpolation in table given on p. 59, "Description and Rules of Management of the U. S. Rifle," W. D., 1914.

[3] From table on p. 22, "Regulations for Field Firing, etc.," W. D., 1911,

The average range was determined at an elevation of 400 feet above sea level and at an average temperature of 60° F. Under different conditions the results would, of course, be modified, but it is believed that those assumed are sufficiently accurate for the purposes in hand. The average leaf sight has been found, under these conditions, to shoot approximately fifty yards short at each range. If aim be taken with it at the bottom edge of the target, as regulations prescribe, the following results,[4] at that point, will be obtained:

Range	Distance below point of aim, inches
200	− 3.04
300	− 5.15
400	− 7.82
500	−11.20
550	−12.80

Of course, some rifles shoot very high, while others shoot very low, but they are the exceptions. It is the average rifle to which reference is made and which must be dealt with in studying collective effect. Nor must it be overlooked that these figures were determined by a large number of experimental firings.

Having determined the average ordinates of the battle and leaf sights and so the distance of the average point of impact above and below the point of aim, we must now study the trajectories of a number of rifles fired with a common aiming point and the same sight setting. Many different factors, such as variations in the parts of rifles, imperfections in ammunition, atmospheric influences, and errors in aiming operate to prevent the shots fired by a group, with the same range and objective, from all striking the same point. Imperfections in arms and ammunition, and atmospheric influences are only minor causes of deviation when compared with the errors caused by the personal equation of the firers. Hence, the nearer complete elimination of personal errors is obtained, the closer will the trajectories approach a common center; that is, the less will be the dispersion.

Eliminating the small deviation due to arms, ammunition, etc., it will be seen that the greater the proficiency of the firers, the less area will their shots cover at the target, or the greater number

[4] Computed from table on p. 329, "The Rifle in War," Eames.

of shots will be found in a given radius from the center of impact. It is plain then that if riflemen are classified into groups of equal degrees of proficiency, an average or mean degree of dispersion may be established by extensive firing. This has been done both in this country and abroad, and although the results do not always agree, the discrepancies are due to differences in the methods of firing and not to any error in the principles stated. In our service, there have been deduced from the firing of a great number of shots, average dispersions of "good shots" and "average shots." By good shots are meant classified shots in the proportion of one expert to four sharpshooters; by average shots, shots of all grades, as these are found in the average well instructed company. The mean or fifty per cent dispersions in inches are given as follows:[5]

	Mean (50 per cent) zones.			
	Good shots		Average shots	
Range	Vertical	Lateral	Vertical	Lateral
200	20.64	19.08	24.36	21.24
300	29.28	26.04	34.44	28.92
400	36.60	31.32	43.08	34.80
500	42.96	35.16	50.52	39.12
550	46.20	37.68	54.36	41.88

In making computations with these collective dispersions, the fact must be considered that while apparently the shots fired by a group of riflemen with the same range and objective appear on the target without regard to any rule, such is not actually the case. The group is arranged in conformity to a well established law. This law states that the mean, or as it is sometimes called, the fifty per cent dispersion, contains one half the total number of hits and that these are more closely grouped about the center of impact. Now, as the mean dispersion (both vertical and lateral) is known for different classes of marksmen at the several ranges; as it is known that in it will be found fifty per cent of all the hits; and as it is known that the density of the group decreases from the center outward, the number of hits different classes of marksmen will make at the several ranges can be predicted. This is done by a comparison of the area of the dispersion with the area of the target. The ratio between these two quantities is called the "proba-

[5] Table I, Regulations Prescribing Standard for Field Firing, etc.," W. D., 1911.

bility factor." By reference to a table of these factors,[6] the percentage of hits to be expected on any target with any given range and dispersion may be found.

Now, if a practical application of this knowledge to the question under discussion is made and the percentage of hits different classes of marksmen will make with the battle sight and with the leaf sight is determined, a comparison of the relative efficiency of the two sights on this basis is a simple matter. This comparison permits of an appreciation of the value of the battle sight and provides in a measure an answer to criticisms made upon it. Details of the principles involved in determining the hits to be expected from the two sights are not thought to lie within the scope of this discussion. However, they may be found by those interested in pursuing the subject further, in Chapter II of "The Rifle in War" (Eames). An outline of the computations as an example is given in the footnote.[7]

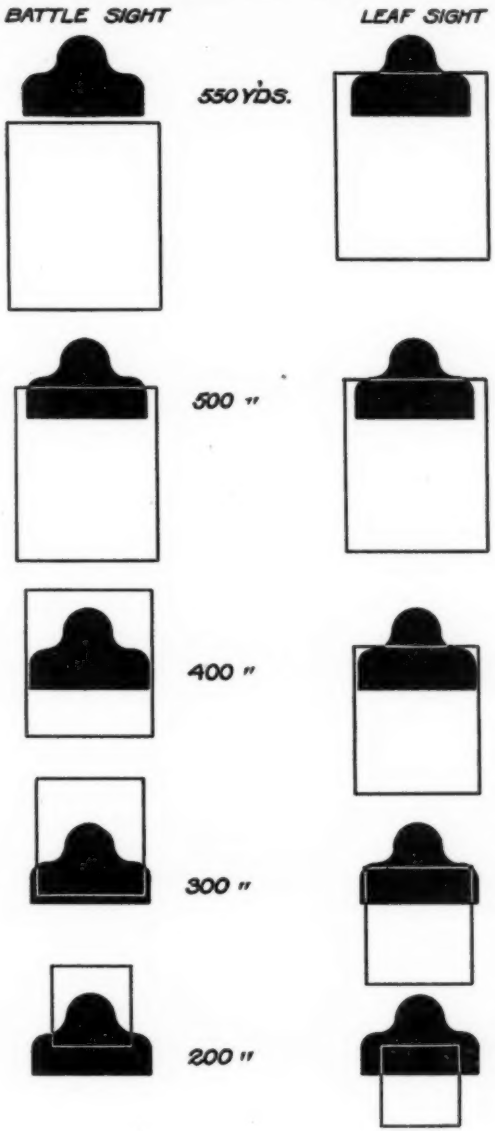
The following are the results obtained:[8]

	Percentage of hits expected			
	Good shots		Average shots	
Range	Battle sight	Leaf sight	Battle sight	Leaf sight
550.....	3.06	4.05	2.70	3.30
500.....	4.40	4.64	3.65	3.80
400.....	7.32	6.07	5.68	4.97
300.....	9.96	8.67	8.16	7.19
200.....	17.06	14.12	13.90	12.09

[6] P. 20, "Regulations for Field Firing, etc.," W. D., 1911.

[7] Computation for good marksmen with the battle sight at 550 yards: vertical dispersion 46.20 in.; lateral dispersion 37.68 in.; center of impact 24.78 in. below bottom of target; F target, 19 x 26 in., area 314.16 sq. in. Twice the distance from center of impact to top of target divided by vertical dispersion (87.56 ÷ 46.2) equals 1.895, the probability factor, or 79.88%. One half of this, or 39.94% is the percentage expected in a strip equal to the distance from the center of impact to the top of target, or 43.78 in. Twice the distance from the center of impact to bottom of target divided by vertical dispersion (49.56÷46.2) equals 1.072, the probability factor, or 53.04%; one half of this, or 26.52%, is the percentage expected in a strip equal to the distance from the center of impact to the bottom of target. 39.94% minus 26.52% equals 13.42%, the percentage expected in a strip the height of the target. The width of the target divided by the lateral dispersion (26÷37.68) gives 0.69 as the probability factor, which corresponds to 35.85%. Then 13.42% times 35.85 equals 4.81%, or the percentage expected in a rectangle 19 in. by 26 in., or 294 sq. in., and 494: 314.16 = 4.81: x, therefore x equals 3.06% for the target.

[8] Computations made using the F target; if more targets are used, different results will be obtained, but the relative proportion will remain the same. See par. 7, "Regulations for Field Firing, etc.," W. D., 1911.


BATTLE SIGHT
LEAF SIGHT
550 YDS.
500 "
400 "
300 "
200 "

This gives for good marksmen an average percentage with the battle sight for the five ranges of 8.36, and with the leaf sight, 7.51. For average marksmen, the percentages are 6.82 and 6.27 respectively.

The sketch on page 563, drawn to scale, represents graphically the distribution of good shots at the indicated ranges. The rectangles in the sketch, whose areas are based on the dispersion tables previously given, contain in each case twenty-five per cent of the expected hits.[9]

There are other factors to be considered, however, which will undoubtedly reduce the percentage in favor of the battle sight. The leaf sight shoots low, and therefore more ricochets may be expected from it. The center of impact of the battle sight lies in some cases high on the target; this fact will tend to reduce the percentage to be expected, as battle targets will probably not be as high as the "F" target. The expected percentage is calculated on the area of the target and does not take into consideration the fact that it is much smaller near the top; this fact will also undoubtedly operate to reduce the hits made by the battle sight.

There is yet another point to consider, and that is the range. Errors in estimation of ranges do not affect the battle sight, while they directly affect the result produced by the leaf sight, even though that much discussed point is granted as to whether or not accurate sight setting can be obtained in battle.

The foregoing results are not absolutely correct, as interpolations have been made in some of the tables and no allowance can be made for the factors heretofore stated. However, it is believed that the figures given are sufficiently accurate to prove that the average number of hits to be expected from the two sights will closely approximate each other when the firing is done collectively in the battle-sight zone. It is believed also that these figures show that condemnation of the battle sight on the ground that it will not hit the point at which it is aimed, does not stand the light of analysis when its collective effect is considered.

It is apparent from the foregoing that range, size of target, and the trajectory are important factors in determining the relative efficiency of the battle and leaf sights. Nevertheless, important as these factors are, it is to the collective effect, which embraces them all, that recourse must be had for a final solution of the problem.

[9] That is, the percentage of hits expected in the 50% vertical dispersion times the percentage of hits expected in the 50% lateral dispersion equals 25%.

Shrapnel and Infantry Formations.[1]

By Col. L. W. V. Kennon, 25th Infantry.

"IT IS necessary that infantry officers receive some instruction in artillery tactics; otherwise cooperation is impossible. And one of the chief lessons of the war is that cooperation between infantry and artillery must be perfect to guarantee success." (Official Bulletin No. 3, p. 196.)

With modern weapons and methods, artillery has advanced far beyond the days of '61 and '65, when veteran soldiers expressed contempt for it, declaring that it merely "made a hell of a noise and scared recruits." It is now a factor decidedly to be reckoned with and is an auxiliary of great power. It is the sister arm of the infantry, and more than ever will infantry depend on artillery to aid it in accomplishing its task; more than ever will it be necessary to develop team work by the two arms. It is stated as a dominant truth that "artillery exists solely to support the infantry." No doubt the task of the infantry has been made harder by reason of the higher efficiency of enemy artillery, but our own artillery is likewise prepared to render us more efficient support than ever before. The close union between the two arms requires that each should study the functions and capabilities of the other and understand thoroughly how they may work together toward the accomplishment of a common end.

The greater efficiency of modern artillery is due mainly to increase in range and improvements in shrapnel, and an important infantry problem is to find means of passing through the zone covered by shrapnel fire with the least loss of men, time, and control. A knowledge of the nature and effect of this fire becomes essential, if we are to know how to devise methods and formations to accomplish these ends, and for that purpose, I shall give a brief outline of the methods of artillerists, and of the nature and effect of shrapnel fire, and shall then discuss some of the methods by which infantry may advance when exposed to it.

The usual caliber of the light field gun in foreign armies is 7.5

[1] A lecture delivered to the officers and noncommissioned officers of the 25th Infantry, preceding exercises involving the formations described.

centimeters or about 2.95 inches. The range in round numbers is about 7,000 yards, but the most effective ranges are under 3,500 yards. The projectiles are shrapnel and shell, the former being used against animate, the latter against inanimate objects, such as walls, buildings, or trenches. The fire is direct or indirect. The latter is a development of the old methods of firing mortars from behind epaulements. As applied to field pieces, the idea is quite recent and was tested thoroughly for the first time in the Russo-Japanese War. The details and methods were worked out by the French, whose guns are the model on which our own field guns were built. In certain respects, our gun is superior, and there is probably no better light field gun in existence.

In direct firing, the target is visible and is aimed at in the same manner as the infantryman aims at his target, making allowance for range, windage, and drift. The most important difference in the case of shrapnel fire is that the projectile is intended to burst at a certain distance and height before reaching the target.

In indirect firing, the gun is sheltered from view and from direct fire by some natural or artificial cover, the gun being pointed by means of data obtained by observation and computation usually made on the ground. The pointing is done with accuracy by means of the panoramic sight. In this instrument, the circle is divided into 6,400 equal parts called mils. This division is of very great convenience as it enables all settings to be made in terms of the range.

From the definition, we have, R being the radius or range, $1 \text{ mil} = \frac{2\pi R}{6400} = .00098R$ or practically one-hundredth of the range. The mil may therefore be defined as the length of an arc of the circumference approximately equal to one-thousandth of the radius, or as used by artillerists, of the range. Such a unit also may be taken as the measure of angles, one mil corresponding to an angle of 3′ 22″.5. By means of this sight, the gun may be set for any given range or deflection. By means of the range quadrant, a correction is made for difference of level between the gun and the target. The range tables being calculated for level ground, this correction is necessary. The differ-

ence of level is computed from observations made on the ground. This is termed measuring the angle of site. The cant of the piece, caused by difference of level of the wheels, is corrected by means of the cross level of the quadrant. The gunner aims at a point that he can see clearly and sets off a deflection and an elevation such that when the line of sight is directed upon the aiming point, the gun will be directed upon the target. The range deflection and angle of the site are determined and announced by the battery commander.

When shrapnel is used, the fuse must be set for the range, and a correction applied to regulate the height of burst, the normal height of burst being 3 mils. In Germany, the interval of burst is constant for all ranges; the height of burst, therefore, increases with the range.

When the guns are concealed, they are said to be in masked position, and the fire is referred to as masked fire; when not concealed, they are in unmasked position, and the fire is unmasked fire. If the guns are posted so that through the sights, the hostile position can just be seen over the mask, they are said to have sight defilade; if posted so that the flash of the gun when fired cannot be seen by the enemy, they are said to have flash defilade.

The common shrapnel has a steel cylindrical case with an approximately ogival head in which is placed the time fuse. A steel tube connects the head with the bursting charge in the base of the projectile. Bullets are placed between the head and the base, and are separated from the bursting charge by a metal diaphragm. The bullets are embedded in a smoke-producing matrix, and the bursting charge is usually of black powder and gun cotton. The number of bullets varies with the caliber and make of the gun. In Germany, the 7.5 cm. gun has different makes of shrapnel, containing 285, 320, and 330 bullets, each weighing nine grains or a little less than one-third of an ounce. Our own shrapnel contains 252, each weighing .38 ounce; the bullets are round balls about one-half inch in diameter.

In firing, the fuse is set so that the bursting charge will be reached when the projectile has arrived at a short distance in front of the target. The effect is to drive the bullets forward, forming the so-called cone of dispersion and scattering the bullets with an increase of velocity over a space of ground which

varies with the angle made by the tangent of the trajectory with the horizontal, the angle of opening, and the height of burst.

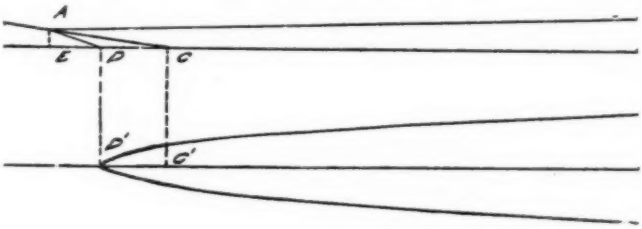
This cone of dispersion demands our attention, for the projectiles which form it are the effective instrument of light artillery against infantry.

The opening-out of the bullets to form the cone of dispersion, called angle of opening, is due to several influences, viz: the remaining velocity, the bursting charge, the shape of the diaphragm, and the rotation of the projectile on its long axis. At the short ranges, the velocity is greatest, increasing the tendency of the bullets to continue in the direction of the trajectory and so to narrow the cone. The action of the bursting charge increases this effect by giving added impulse to the bullets. It is estimated that the increase in velocity due to this cause is about 164 feet per second. In our service, the increase is said to be 274 feet per second. That component of the velocity of rotation which acts perpendicular to the axis of the projectile, tends to carry the bullets away from the trajectory, acting with greater force on the bullets farthest from the center of the projectile. The remaining velocity of the projectile decreases as the range increases; the velocity due to the bursting charge and the velocity of rotation are practically constant. The cone of dispersion, therefore, widens somewhat as the range increases but with corresponding decrease in density.

If the course of bullets after the burst were in right lines, a true cone would result and the intersections of horizontal planes would be conic sections, but in this supposition, the force of gravity and resistance of the air are not considered. We may neglect the parabolas and hyperbolas, therefore, and assume that the bullets would soon come to earth, and with the exception of a few erratic examples, would strike within the limits of an elliptical shaped figure of dimensions and of area varying with the range and height of burst. Owing to the light weight of the bullets and to the resistance of the air, they finally become incapable of disabling a man. By experiment, it has been determined that bullets become ineffective at a distance of 300 yards from the point of burst. In the German light field gun, the effective depth of the ellipse in which disabling hits are expected at 2,500 meters, is about 245 yards with a width of about 30 yards. At

5,000 meters, the depth is about 75 yards and width about 20 yards.[2]

The greatest density is found in that part of the ellipse nearest the point of burst about 30 yards in depth; at 2,500 meters, there are between D and C about 1.28 bullets per square yard; troops caught in this belt would suffer severely. Beyond C, the density and velocity rapidly diminish, there being about one bullet to every three square yards. The probability of disabling hits is much less. At 5,000 meters, the density is more uniform and between D and C is about one bullet per square yard.



The foregoing will give an idea of the action of the projectile under the most favorable circumstances and assumes an accurate determination of the range, the angle of site, height of burst, and direction. These elements are, whenever practicable, determined in advance, but this is not always possible, and in fact, the usual method is to locate the target by trial shots, or "fire for adjustment."

The method is first to use data estimated or calculated as closely as circumstances permit, and fire shots, observing where the bursts occur with respect to the target. This is the purpose of the smoke-producing matrix. If the smoke obscures the target, a "short" is inferred; if the target is silhouetted against the smoke, an "over," and corrections are made accordingly. The target having been located, "fire for effect" is begun. If the target is not clearly defined or if it can be located only in a given zone, recourse is had to bracketing. If for example, a target had been located at some point between 2,500 and 2,600 yards, fire would be delivered at the ranges of 2,500, 2,550, and 2,600 yards.

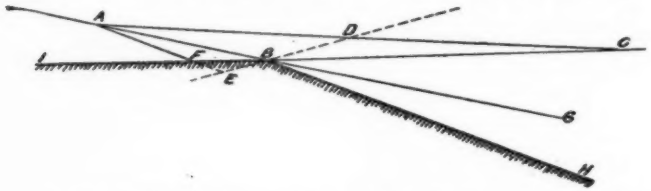
[2]These figures result from taking the maximum widths with different heights of burst.

The danger zone, therefore, would be about 350 yards in depth.

In firing upon a wide target, the pieces are given deflections such that each gun will cover about twenty-five yards on the front of the target. A battery of six guns is expected to have destructive effect on 150 yards of front at the target. On a greater front, sweeping fire is employed. In this class of fire, the deflections are changed between shots so as to distribute the fire over a wide front.

The character of the terrain greatly influences the effect of shrapnel fire. It may favor or prevent ricochets. A rising slope at the target reduces the effect of ricochets and diminishes the area of the zone of dispersion. For instance, a line of supports 200 yards in rear of a line of infantry on a slope of 5 degrees would suffer no losses from fire well directed at the infantry line.

On a reverse slope, the effect depends upon the relation between the slope and the angle of fall of the projectile. If fire be accurately directed at B and the slope of the ground is less than the



angle of fall of the projectile, the effective depth will be increased up to 250 to 300 yards, and the bullets will sweep the ground more closely than when the ground is level. If the angle of fall equals the slope, this sweep will be at its maximum. If the slope exceeds the angle of fall, the effect is lessened; no bullets from the upper half of the cone of dispersion will be effective against a target on the slope. Hits may result from bullets when the angle of fall plus half the angle of opening is equal to the angle of slope. If the angle of slope is greater than this sum, no hits will be made.

In the German field gun the angle of fall at 2,500 meters is 6°45′; half the angle of opening is 8°26′; a reverse slope, therefore, of 15°11′ is necessary to protect from this class of shrapnel fire. At 5,000 meters, the reverse slope must be 29°22′ to afford protection.

The target must be seen, in general, for fire to be adjusted upon it. It is not essential that the gunners or even the battery commander should see it; a remote observer who can inform the battery commander by wire or signal where his shots are falling, may enable the fire to be directed with accuracy, for it is not the precise aim of the rifleman that is required but shrapnel acts as a magnified shot gun. Slight folds of the ground formerly gave protection by rendering troops invisible and therefore impossible to locate, but since the advent of aeroplanes, slopes must be sufficiently steep of themselves to afford absolute protection to troops seeking shelter behind them.

If conditions are favorable, shrapnel fire is very destructive in effect against animate targets; many artillerists claim that the effect of such fire is annihilating and that none can live in the zone upon which it is directed. This claim has been made for many years, but it is not borne out by the facts of history. In our war with Spain, the effect of shrapnel fire was insignificant; there were some losses, but they were small in number compared with those inflicted by the infantry rifle. It is true that the fire was not in general well directed; our troops were intrenched on the crest of a hill with steep slopes in rear; most of the shots were "overs," and after a short time, neither the men in trenches nor those in support paid any attention to the shrill scream of the projectile in flight nor to the vicious sound of the burst. In the Russo-Japanese War, field artillery was largely employed by both sides under more modern conditions. The percentage of causalties by artillery fire was only about 15 per cent of the total.

Peace-time proficiency in target firing can never be taken as an exact measure of destructive effect in war. It affords an indication of what may be expected under favorable conditions, but many circumstances must combine in order that these conditions may be realized and the maximum effect produced; slight errors in adjustment may render the effect entirely nugatory. The probability that such errors will occur, authorizes the attempt to advance in the face of artillery fire, when tactical conditions demand that an advance be made. It is a fire to which infantry will be exposed and against which it will be required to make headway; surely it must "pay the price," but that is the cost of victory, and without the advance of infantry, there is no victory. Our study must be how to reduce the price.

Our infantry drill regulations tell us to ignore both artillery and long-range infantry fire (I. D. R. 453). The power of modern weapons will prevent a literal compliance with this injunction and force us most carefully to consider what means we may adopt so to limit their effect that we may advance in spite of both.

Let us assume a force operating over open country against an enemy in position.

Beyond about three and one-half miles from the enemy's position, the ordinary columns of route are used, but at that distance a general deployment must be made. From 6,000 to 4,500 yards, the effect of even well directed shrapnel is comparatively slight; the zone of dispersion is small, and the remaining velocity greatly reduced. An advance in columns of battalions or regiments may be employed. If an appreciable effect is produced, the advance may be continued in line of companies in column of squads.

The most effective ranges of field artillery lie under 3,500 yards, and at that distance special protective formations must be taken in order to continue the advance. As the immediate object is to form an infantry firing line within effective range of the enemy's infantry, the position should be carefully located and the firing units distributed so that the end of the advance shall find them in a line in numbers adapted to the opening of infantry fire and under control of their proper leaders. In whatever formation adopted, the infantry must push resolutely forward until if possible, it is about 800 yards from the enemy, before opening fire (I. D. R. 307-308) and without awaiting the result of the artillery duel. The firing of our own artillery over advancing infantry is habitual.

The advance through the zone of artillery fire is merely a preparatory step, during which infantry is helpless for offense or defense, as its peculiar weapons are useless at such ranges. Recourse must be had to protective measures.

All close-order formations of considerable bodies within effective artillery range are unsuitable except where the ground affords adequate cover. The skirmish line is intended solely for developing fire action and is weak for every other purpose. It is easily located and would instantly become a target for well directed fire. It is a vulnerable formation, moreover, in that it is possible for a single round by a six-gun battery to put out of action more than 150 men.

Advance by lines of platoons or squad columns and by succession of thin lines is recommended in our drill regulations (I. D. R. 212), which, however, wisely leave to commanders a wide latitude of choice; the formations presented are stated to be suggestions and "other and better formations may be devised to fit particular cases. The best formation is the one which advances the line farthest with the least loss of men, time, and control." (I. D. R. 220.)

The line of squad columns offers little advantage over the skirmish line in point of vulnerability, except that from the front, it presents a less conspicuous target, and even in very low brush, is extremely difficult to locate.

In foreign services, the favorite method is the advance by small columns, usually by platoons well closed up and with intervals of about 50 yards. Care is observed that the heads of these elements are not in the same line, as a linear formation is favorable for location by fire for adjustment. The platoons are therefore placed in irregular echelons and often are marched obliquely, with the special object of confusing observers in locating bursts in relation to the position of the troops.

It will be observed that intervals are such that only one platoon would be in the zone of dispersion of a single shrapnel; the distance such that if one platoon were struck, the others would be beyond the reach of guns fired with the same range.

It must be remembered that although artillery fire is effective between 2,500 and 3,500 yards, these distances are considerable; expressed in miles, they are about 1.4 and 2 miles respectively, and in country at all broken, it is quite difficult to observe the relative position of bursts and troops which is necessary for correct adjustment. As the troops advance, this will become easier, and they will come under fire; at best, adjustment will be delayed only. There are, however, some remarkable tales of troops advancing in this manner during the present war with slight losses and even without loss at all. In the Balkan War, at Lopen, on July 4, 1913, two battalions and one mountain battery made their way, man by man and piece by piece, along a three-kilometer (1.9 miles) stretch of ridge, slightly wooded in places with here and there a cornfield, a gully, or a stretch of rocks, all the time under fire of two field-artillery batteries, and not a man or horse was lost.

In the advance in line of platoon columns, intervals of 30 yards and distances of 250 yards may be taken as minima. Care should be taken to avoid arrangements which appear to be lines or columns as viewed by an enemy observer. These formations would seem to be quite vulnerable when exposed to sweeping volley fire from a battery toward a flank. Once under fire, it is better to change position without being noticed, if that be possible, seeking the best cover available from which to continue the advance.

The advantages of the method are that the units are difficult to locate, they present small targets, the men are kept under control, the advance is comparatively rapid, and a relatively strong firing line is established on the arrival of the first unit at the designated position.

The advance by a succession of thin lines was eventually adopted by both belligerents in the Russo-Japanese War. This method was not popular in Europe by reason of the mixing of units on the firing line, due doubtless to the method of development by which the battalions were mixed from the start. Under our system (I. D. R. 218), this mixing of units is avoided, and if lines are kept with a distance of 200 or 250 yards, the target is quite unsuitable for artillery. With men at eight paces interval, no more than four men could be reached by a single shrapnel. The length of time required to form the firing line is urged as an objection to this system. With distances of 250 yards between lines, the depth of the command is 1,750 yards; the advance will be made in this formation from about 3,500 yards to 800 yards, a distance of 2,700 yards; the time required will be that necessary for the leading line to advance 2,700 yards plus that necessary for the last line to close up, or about 4,450 yards. At quick time, this distance would be covered in 45 minutes. The delay due to the formation would be about eighteen minutes. We may allow an hour for the advance over open country. A line of platoon columns could make the distance required, 2,700 yards, in quick time in 27 minutes, practically in about 40 minutes. There is therefore a gain in time of about twenty minutes as compared with the advance in thin lines; but there is also greater liability of loss.

A formation between the above may be taken by sending forward successive staggered lines of squad columns, the flank

squads of each platoon forming the first line, the others following in succession at 250 yards distance. In country covered with tall grass or low brush, it is almost impossible to locate troops in such a formation by the ordinary methods of fire for adjustment.

This formation is less vulnerable than the line of squad columns; it holds men in a little better control than the thin lines and takes less time than the latter; it is less vulnerable than the platoon columns, requires about the same time for deployment but sacrifices some degree of control.

Artillerists in position will watch all passes, crests, sunken roads, the edge of woods, and all points in their front which are likely to be used by advancing infantry either for passage or cover. Such points will be selected as targets for one or two guns at least and should be avoided or crossed at a run, unless they afford actual and not apparent protection. Until the bursts are close, the march should be continued. We have seen that the action of shrapnel is to produce a rain of bullets over a limited space and that a sweeping bracketed fire from a battery of six guns will cover an area at effective ranges of about 300 yards front and 350 yards depth. If possible, this zone should be avoided by moving to one side and seeking cover or concealment; "the force should disappear absolutely without leaving a trace." A projectile bursting "over" or just "short" calls for rapid movement forward or to the side; heads of columns should, as a rule, be directed toward the enemy's battery; rapid forward movement may put the troops in front of the point of burst and is probably the safest move, as all "overs" are perfectly innocuous. A projectile bursting considerably short requires cover to be taken. If no cover be available, men should lie down and keep hidden from view; the pack will afford a certain measure of protection. During fire for adjustment, groups may advance at a run and lie down; a disappearance of the troops serves to baffle the enemy; this suggests also that on hearing the report of discharge, troops lie down instantly and remain down until the smoke is dissipated or has drifted away, when the advance is resumed.[3] The presence of the enemy's aircraft will probably give the enemy artillery the approximate location of advancing troops, who must

[3]It is estimated that beyond 1,500 yards, the sound of an approaching shrapnel precedes the projectile. Beyond 3,300 yards, the sound of the discharge precedes the projectile.

then soon expect the first shots of the fire for adjustment. When such aircraft are near, cover should be taken at once, under hedges, brush, or anything which will screen troops from overhead view. All other motion should cease, because motion attracts the eye, where an immobile object often escapes it. By such measures, adjustment may be delayed but eventually will occur.

It seems that the advance in succession of thin lines is the least vulnerable formation and should probably be adopted when the flanks are not exposed. The advance should be as rapid as possible; short open spaces must be passed at a run. It is not to be presumed that the enemy will quietly permit an advance of this kind without opposition. It will probably be met by sweeping zone fire of artillery and by long-range infantry fire. There will undoubtedly be losses, but the important consideration is that the losses will not be great enough to paralyze the advance. On a flank, special precautions should be taken to guard against attack; all of the formations discussed are merely protective in their nature; the dispersion is great, the control slight; they are weak for fire action either to the front or flank. An irregular echelon formation of platoon columns for a force on a flank would seem to be proper, as from it a reasonably strong firing line could be formed either to front or flank. In broken and grass or brush covered country, the advance by platoon or squad columns would seem best. The circumstances of each particular case must be considered, keeping in mind always the rule of the drill regulations that "the best formation is the one which advances the line farthest with the least loss of men, time, and control."

The problem has been considered above under the hardest conditions—those of an unsupported advance over open, level ground. It will probably be rare that such conditions will exist. Our own artillery will occupy that of the enemy; the terrain will afford more or less cover. Ground sloping to the front is favorable, as it diminishes the area of the beaten zone and the effect of ricochets; fog and night will be taken advantage of to conceal the movement of the troops; concealment must be sought by any possible means consistent with the advance.

At worst, artillery fire is far less effective than infantry fire. When infantry fire begins to be felt, a slower advance will be necessary. The designated line, when reached, will certainly become a target for both infantry and artillery fire, and unless it

affords natural cover, the first troops to arrive should intrench as hastily as possible, to get cover for themselves and for the men joining them from the rear. Beyond this line, cover and protection must be regarded as of less importance than the obtaining and maintaining of superiority of fire; the line formation and rushes by companies, platoons, squads, files, or even by individual soldiers are used to advance for the deciding bayonet combat. Victory results only when infantry can occupy and hold the position held by the enemy's infantry.

Supports and reserves will in general be obliged to adopt the above formations in crossing the artillery zone, but if cover be available, the reserve should be kept formed in close order, ready for prompt action whenever it may be required of them by the tactical situation.

The effects of common shrapnel fired from light-artillery field guns only have been discussed. The effects of howitzer fire are similar; the angle of fall is greater, the beaten zone wider but of less depth, and the density in the beaten zone greater. The methods of advance would be the same, except that the intervals between units should be increased to not less than fifty yards in the advance by platoons. Reverse slopes must be about 21 degrees and 27 degrees to protect against light-howitzer fire at 2,500 and 3,500 yards, respectively. At 5,000 yards, the slope must be 40 degrees to give protection.

With the unit projectile, combining shrapnel bullets and a high explosive head which bursts on impact, the effect against animate targets is less than that of common shrapnel, but adjustment is facilitated. A high-explosive shell may be employed against troops in trenches; the angle of burst is approximately 180 degrees. Many fragments would therefore be driven almost vertically downward.

A word as to trenches. Ordinary shrapnel is not effective against troops in trenches of the standing type. The shallow trench is of little use on level ground or ground sloping to the front. On a reverse slope, a shallow trench will give protection. Overhead cover is required for protection against howitzer and shell fire, though not so essential in the former as in the latter case. The heavy high explosive shells now in use against trenches require all trenches to be provided with traverses, not fewer than one to a squad. Besides the light artillery discussed above, a

new enemy of infantry has appeared in the shape of heavy field artillery with a range of 11,000 yards and with shrapnel containing nearly a thousand bullets.

Infantry must be prepared to meet this class of fire. Data for a complete knowledge of its effects are not here available, but it would seem that these new weapons will force earlier deployment and will require more extended intervals and distances than those deduced above.

The difficulties placed in the way of the infantryman before he can reach his enemy with the bayonet have vastly increased, but that is still his object. The difficulties are greater but not insuperable; the task harder but not impossible. Alert commanders, even of the smallest units, may save their men and accomplish the allotted task by the exercise of judgment and a prompt utilization of favorable conditions, always remembering that purely protective measures must not be allowed to interfere with energetic aggressive action in furtherance of the plan of the commander. Thorough training is necessary in all phases of battle action; the utmost attainable proficiency in marksmanship must be supplemented by tactical dispositions designed to meet the new conditions constantly arising in modern warfare.

The Importance of Musketry Training.[1]

By Major Vankoff, Bulgarian Army.

SEVERAL months before the commencement of the war, the question of musketry training was raised in our press. All emphasized the fact that so far as this department of training was concerned, great negligence had been noticeable during late years and in consequence, the marksmanship of the soldier was poor.

During the progress of the war, we saw the tremendous significance of marksmanship as a determining factor in the successful issue of battle, and we also saw our own deficiency. This was particularly noticeable in our war with the Allies, which was carried on in a mountainous region and in which intelligent work was required of the individual rifleman. The losses of the enemy during the last war were almost insignificant compared with the average losses of other wars.

In order to prove this assertion, I will cite as an example the battle of July 30, 1913, at Logdasch. There participated in that engagement about 2,600 riflemen, disposed on a front of 7,000 meters; 400,000 rounds were fired in half a day, and as a result, the enemy lost in killed and wounded, only 120 men. (These figures were carefully collected by me personally on the spot.) Here a defeat was sustained. The percentage of hits was 3/100 of one per cent, a percentage only one-third of that which may be expected from infantry of the average training in musketry.

From the above, it is seen that the results of our fire during the war were unsatisfactory, and that in future, when we train men in time of peace, musketry should occupy our attention.

The well-trained rifleman should know how to hit just where he aims, should know when and upon what objects he should fire, should know how to utilize the folds of the ground for the purposes of cover, and should be able to execute the orders and instructions given him for firing in due time.

For the realization of good results from fire, musketry training alone is not sufficient. A certain ability should be developed on

[1]Translated by 1st Lieut. Sherman Miles, Field Artillery, July, 1914.

the part of the officers in fire direction. This ability to direct and utilize the power of fire may be called the "Tactics of Infantry Fire."

As far as I know, very little has been written on this subject in our country; but the experience and the result of the war compel us to consider more minutely this department of training. For this reason, the object of the present article is to raise certain questions regarding "the tactics of infantry fire" for the purpose of stimulating some explanations in reference to them by comrades who participated in the war.

OBJECT OF FIRE IN BATTLE

Our object in battle is to approach the enemy as quickly and with as little loss as possible, in order to drive him from his occupied positions with the bayonet. If on the other hand we are on the defensive, we strive to hold off the enemy as long as possible and to inflict as great losses, both material and moral, as we may. With this in mind, the object of fire will be to facilitate our maneuvers and to disorganize the enemy, both morally and physically, in order that in our encounter with him, he may exhibit less will power and resistance. Fire attains the above object when, by the way it is produced and directed, it causes the greatest possible losses to the enemy.

THE SURPRISE BY FIRE

The sudden and unexpected opening of fire produces great confusion in the enemy's ranks and lowers his morale in proportion to the intensity of the fire.

Surprise from a strong flanking fire causes still greater moral damage to the enemy. For that reason, flanking fire should be used at the first opportunity and by surprise. If well executed, it causes such rapid and intense confusion in the ranks of the enemy that he cannot easily recuperate.

Such was the case in the battle of October 30, 1912, at Lule Burgas station. A strong Turkish force was disposed along the crest about 1,200 paces distant from the 16th Infantry and checked the advance of that regiment until 3.00 p. m. About that time the machine-gun detachment of the 40th Infantry suddenly appear on the right of the large ridge over the Erkene

River and opened a flanking fire on the enemy. The effect of this fire was such that within ten or fifteen minutes the enemy fled and cleared the front of the 16th Infantry, which for some unaccountable reason did not take advantage of the opportunity to advance. The fire also hampered the Turkish left flank to such an extent that the enemy was soon compelled to bring forward an entire battery and two battalions of the supports to counteract it.

In order to surprise the enemy by flanking fire, the subject should receive the special attention of those commanders whose troops have not yet opened fire. Such are generally the company and battalion commanders whose supports have not yet been expended. Every commander, before sending his last supports to the fighting line, should consider the question of whether they may be so directed as to bring a surprise flanking fire on the enemy. And in deploying the platoons for the firing line, the company commanders should detach certain men with orders to effect a flanking fire. This also applies to flanking patrols and detachments. The effect of flanking fire is so great that seven or eight riflemen can sometimes lower the morale of an entire company.

THE CONCENTRATION OF FIRE

The concentration and rapid opening of fire produces a great effect upon the enemy. But to attain this, too many cartridges are usually expended, and fire discipline is readily lost. For this reason, such a fire should be employed only when its advantages are evident. It may be employed against infantry advancing in strength, against the object of our attack, or when we are striving to gain fire superiority over the enemy—the latter primarily at short and medium ranges. The firing group should concentrate its fire on a line of not more than one half of its own front. The continuance of our fire should depend on the effect produced on the target. If we are firing against advancing infantry, we must continue the fire until the enemy's firing ceases or becomes less effective. In order to concentrate the fire, a certain portion of the enemy's front is designated, on which all the men must fire.

MUTUAL SUPPORT IN FIRING

At the first convenient moment, we should aid the neighboring groups by our fire. When a part of the advancing firing line

is compelled to halt or to cease firing, while at the same time the enemy opens a strong fire against it, the neighboring groups should hasten to support it by their fire. When a neighboring group advances, we should observe the locality from which its advance is opposed and should direct our fire on that point.

If we are informed as to the point against which the main attack will be directed, all adjoining groups should aid the attack by fire as soon as possible with the object of crushing the spirit of the defenders of the point attacked.

Mutual support of neighboring groups by fire is as important as mutual tactical support. Unfortunately, in our late war, not enough attention was paid to this question, and there were even cases in which lost battles might have been saved, if those officers who directed the fire had maintained a closer fire connection with their neighboring groups.

On July 30, 1913, in the battle at Leshko, a battery commander was requested to open fire against an advancing hostile column to the right of his battery. He refused to do so on the ground that the target indicated was within the zone of other batteries close to him. At that time, the battery in question was not engaged and was waiting for the appearance of a target in front of it in order to commence firing.

RAPIDITY OF FIRE

A principle is promulgated among us to the effect that rapidity of fire, whether by the use of a definite or an indefinite number of cartridges, should be uniform—from nine to eleven rounds per minute.

I am of the opinion that the rapidity of fire should depend on the range and on the size of, and the danger from, the target. At long range, against a battery going into position or a cavalry or infantry column passing across a small opening, fire should be produced with the greatest possible rapidity. When the enemy is about to charge with bayonet or the cavalry is about to attack, then the maximum infantry fire should be developed—ten rounds per minute. Against separate groups at short and medium ranges, the rapidity of fire should not be greater than five or six rounds per minute, since in this case, great precision is required. Against an enemy who is lying down and whom we wish to pin to the ground, the rapidity of fire should depend on the ability of the

enemy to rise and advance. In this case, a constant slow fire should be maintained and increased or diminished according to the effect it produces upon the enemy.

The rapidity of fire also depends on the number of rounds of ammunition the rifleman has available when he settles down on his position. Rapidity of fire is, therefore, in general fixed by the rifleman himself, who must be carefully instructed in this very important detail.

In battle, individual fire at a rapidity fixed by the rifleman himself was the most prevalent method. This kind of fire should be introduced in our training. But in order that there should be no needless expenditure of ammunition, officers should designate, whenever possible, the number of rounds to be fired on a given target (fire by counted cartridges). This, however, can only be done at long and mid ranges. At short ranges, it is very difficult, for the power of the enemy's fire is such that officers cannot observe and designate the targets. At short ranges, the rifleman himself must determine the targets, the rapidity of his fire, the ranges, and the number of rounds to be fired. This can only be done by a thoroughly trained man. From the range of 1,200 paces onward, the influence of the officers in the direction of the fire completely disappears. From that point onward, the officers can only endeavor to harmonize the fire support of their groups. At short ranges the rifleman must remember that he should fire only when he has a chance of hitting his target. To keep on firing without aiming or without seeing the target is a criminal act for a rifleman.

Volley fire produces great moral effect. It should be used when we desire to hold the men in hand. This especially occurs at night and in the event of an attack by cavalry, when volley fire is always opened, at least at first. After capturing the enemy's position, the pursuit of the enemy should first be conducted by volley fire, in order that the men may be quieted and the targets located.

Selected and experienced riflemen are frequently detailed in battle to fire against a certain target. From ten to twenty good men can sometimes check the advance of entire groups which attempt to pass through narrow defiles or over rocks. When the enemy advances in small groups by individual men, it is best that our fire be conducted only by good riflemen or by that group only

against which the enemy's group is advancing. If the neighboring group is able to flank the enemy by its fire, it should do so, although it may not advance against him. In all cases, the rapidity of fire must depend entirely on the rifleman himself.

THE SELECTION OF TARGETS

For the selection of targets, good observation on the field of battle is necessary. We must be careful not to be surprised by the unexpected appearance of the enemy in flank, and we must not permit him to cross certain open spaces on which, were he checked, he could be made to suffer heavy losses.

We should prefer, of course, large to small targets, those near to those distant, those which are advancing to those which are lying down, and those which we may take in flank to those which we must take in front.

For firing on groups of the enemy's officers, good riflemen should be selected. Above all, that part of the enemy's line should be chosen as target which constitutes our point of attack.

In battle, targets do not present themselves to us in that clear form in which we may describe them. We have not such a large selection. Rare are the instances when lines, supports, standing and kneeling targets, etc., can be simultaneously seen. In modern warfare, one only hears firing from some fold of the ground without being able to determine positively whence the fire comes. Here and there, separate groups or individuals are seen moving forward. This is at medium and long ranges. It is best not to open fire before the location of, and the range to, the enemy has been determined. A well trained infantry will know how to resist temptation and will not fire before it is certain of being able to hit something.

At shorter ranges, the targets become clearer and can be better observed. Moreover, when the enemy deploys his supports, his lines become more dense, the groups in rear draw nearer, and the rifleman has a larger selection of targets.

When the ground occupied by the enemy is familiar to us, even though we cannot see him, the opportunities will frequently be offered of firing at a certain point, as for instance the crest of a trench, with the object of keeping the enemy down and preventing him from firing accurately. At Pehcevo, the 5th

Company of the 35th Infantry was left as rear guard. Just opposite the company about 800 paces away, there was a wood, from which the enemy was delivering a destructive fire. But the enemy could not be exactly located, and as the men could see nothing, they contented themselves by firing at long intervals. The situation demanded the retirement of the company, but in consequence of the strong fire, this could not be effected without great sacrifice or without dispiriting the men. It was necessary that the enemy be forced to cease firing. The company commander ordered two of the platoons to open a strong fire on the wood, instructing one of them to aim at the bottom and the other at the middle of the trees. When this fire was opened, the enemy ceased firing, thus enabling two of the platoons to retire. Later on, the other two platoons also retired in the same manner. In this case superiority of fire over the enemy was necessary, even though he could not be seen. Our fire must have exerted considerable influence in undermining the morale of the enemy without inflicting heavy losses upon him.

The opening of fire against an invisible enemy, as in the above case, should be practiced only in rare instances. During an engagement, we are very often tempted to fire against invisible objects, but we should resist such temptations. If the enemy is concealed in a wheat field, orchard, stacks of straw, etc., and if the ground occupied by him is not greater than 200 to 300 paces in depth, then fire may be opened, and it will give satisfactory results, since the normal distribution of bullets is about 200 to 300 paces.

In each platoon, there should be two men detailed to observe the movements and the appearance of the targets, obtain the ranges to them, and observe the effect of the fire. These men report their observations to their platoon commanders.

Small targets and quick movements are the secret of advancing at short ranges. Against such targets, the fire of the enemy cannot be concentrated, nor can they be surprised. Having this in view, we should, when on the defensive, follow up closely the movements of the enemy. He will attempt to approach us without due punishment by quick and brief movements and so bring equal and superior forces to the charge. Therefore, a part of each platoon should be designated to observe the movements of the enemy's separate groups and by accurate fire prevent him from advancing unpunished.

FIRE SUPREMACY

Success in battle is almost unthinkable without fire supremacy. It is one of the most important of those factors which lead us to victory on the battlefield.

Fire supremacy paves the way for the advance and in most cases, causes the enemy to shirk the bayonet shock. The fewer the number of cartridges used in securing this supremacy, the more efficacious will be our aim, and the lower will be the enemy's morale in consequence. There comes a moment, at medium or short range, when the advance may be effected merely by securing fire superiority. If the advance is attempted without that superiority, heavy losses will be incurred, and it will succeed only if the enemy's fire is ineffective as against our small advancing groups. Now the enemy's fire is normally ineffective against our groups only at long range. Therefore, instead of wasting ammunition in an attempt to gain fire superiority at long range, it is preferable to advance quickly in small groups. On the other hand, if the groups are too small, the advance is slow and difficult to manage. For this reason, we should advance by small groups at long range only when the terrain is very open, and the fire of the enemy's infantry and artillery is both concentrated and effective.

We should adhere to this rule: "Advance without ceasing and compactly, as long as the fire of the enemy is weak. Deploy only when it is necessary to open fire."

If the fire of the defense is not superior to that of the attack, then the latter cannot be checked. But if the reverse is the case, the advance halts. If this halt be prolonged, it frequently turns into a retirement. In order that this may be avoided and that the advance may be continued, a struggle for fire superiority is inevitable.

The moment for the commencement of that struggle is chosen by the commander, and care should be taken to utilize the success attained at the proper time. Provisions should also be made for failure to win fire superiority.

If we fail to win fire superiority, the officer directing the fire should take steps to protect the men from long exposure to the enemy's fire, which would ultimately cause a retreat. This should never be permitted, for it means defeat. The assistance of the

supports should be utilized. The men are highly agitated in such moments, and therefore the machine guns should be called into action, for by their mechanical fire, they steady men and force the enemy down. The artillery should also be asked to aid with its fire. The sending forward of the supports to strengthen the firing line should be done only after much thought and only when sensible discouragement is observed in the firing line.

Our object must be to compel the enemy to keep down, so that his firing may be ineffective. If the enemy ceases firing, he enables us to move forward. But we should be prepared to counteract the renewal of his fire, which is almost bound to take place as soon as we advance.

The first moment in the struggle for fire superiority is very important, since it exerts great influence on the subsequent course of the conflict. If fire superiority is once gained, it can be gained a second time much more rapidly and with much less resistance on the part of the enemy. So by good leadership, we will be able to push forward a part of our men, while the rest hold down the enemy's fire, *i.e.,* our platoons can advance by the independent fire of their groups.

The experienced commander feels a peculiar sensation in the consciousness that he has obtained superiority of fire and that the advance may be continued. The enemy, morally inferior, loses courage, even when his losses by fire have been insignificant. If the enemy's losses from our fire have been great, he seldom waits for the shock of the bayonet but abandons his position in good time. The enemy who does not abandon his position after we have won the fire superiority at short range, shows high morale.

Fire superiority causes material as well as moral losses to the enemy. The power of his fire is weakened, and we can reach him and expel him with the bayonet with smaller losses. But the expulsion of an enemy who is morally strong, is always a risky affair, and for that reason we should attempt at every halt to inflict such losses by our fire that he will be forced to abandon his position without crossing bayonets.

Company commanders can exercise some influence on the struggle for fire superiority by sending in the supports and by concentrating the fire of several platoons on the same point.

The suspension of fire on the part of the enemy does not necessarily mean that we have won fire superiority, for it often hap-

pens that the moment of opening fire on our side does not coincide with the opening of fire on the other. Numerous cases occur in which the attack halts and opens fire in order to prepare the advance, while the defense takes shelter in the trenches and waits until the advance is resumed to renew its fire. This is one of the best methods available to the defense of deceiving the attack and frustrating it. At long and medium ranges, this alternation of fire between the attack and the defense is very common. But at the short ranges, the fire coincides more frequently, since the nervous tension is higher and the advance is made so quickly and by such small groups that it requires constant observation from the defenders of the trenches.

In order that the defenders of the trenches should have sufficient courage to expose themselves to fire on the advance, a certain amount of training and morale is required. Demoralized troops will shelter their heads in the trenches and indulge in ineffective and confused fire. The latter encourages the attack, facilitates its approach, and increases its chances of success in the bayonet attack. In both cases, it will be seen that the morale and the musketry training of the men are of primary importance.

The losses of the enemy from our fire are at first difficult to ascertain, since they are not always the sole cause of the suspension of his fire. To get data on this important subject, each platoon commander should detail men to observe the effect of the fire. If the fire is ineffective, it should be discontinued. The continuance of a fire whose effect is insignificant, even when we have fire superiority, is useless. This shows how important is the work of the fire observers.

Our losses increase. The slightly wounded are leaving the line. The cowards are hiding behind cover and firing aimlessly or not firing at all. The removal of the wounded men is regarded by some as a retirement, and the morally weak, under various pretexts, are abandoning the line. Our fire weakens. Voices are commencing to be heard: "There are no more cartridges—they kill us—they surround us." It is a critical moment, and the commander should grasp it and take steps to prevent a retirement. These steps consist in the following: winning the fire superiority by sending in the supports and by encouraging the men to fire accurately; and prohibiting the removal of the wounded before the completion of the battle. If the enemy is more than 300 to 400

paces distant, the men may be ordered to cease firing and take cover. They can then be quieted, and we can wait for a more favorable moment for the fire combat.

With well trained troops, all this may be accomplished thoroughly, but morally weak troops will turn their backs. The demoralization of the 16th Infantry at Bahona may be seen from the fact that in the course of five or ten minutes, the regiment abandoned its position under the long-range artillery fire only and did not even attempt to halt a little farther to the rear, where the fire of the enemy could not reach it.

FIRE DISCIPLINE.

Fire discipline exists when the commander can suspend and commence fire at will.

When an order is given for opening fire, all men should leave their cover, if that is necessary, in order to realize the greatest results from their fire. All operations with respect to opening fire, such as recognising the target, adjusting the sights, aiming carefully and firing quietly, must be executed with great accuracy and confidence. A disciplined soldier will never open fire before receiving orders or permission to that effect, and he will not fire if he cannot rely on good results from his fire. Disciplined troops will cease their fire at once, if they see that it causes no serious losses to the enemy. The soldier must keep count of his cartridges and not fire more than the number designated in the command. Good infantry, when retiring at night, will fight with the bayonet and not resort to fire; but this can only be done by well disciplined troops.

In February, 1913, there was a two days' fight for the occupation of the hills east of Silivri (near Chataldja). The 2d Battalion of the 48th Infantry and a battalion of the 1st Infantry attacked the hills during the night and occupied them with insignificant losses. During the attack, the troops did not fire at all, but despite the strong fire of the enemy, they captured the hills.

At night, fire discipline is most important. For that reason, the only kind of fire employed at night is controlled fire (fire by counted cartridges). Any wild firing is sufficient to compromise success, and for that reason, fire discipline must be rigidly enforced.

FIRE POSITION.

When it becomes necessary to open fire against the enemy, we halt on a suitable firing position. This position should enable us to see the enemy, should be such that we can conveniently fire from it, and if possible, should be concealed from the view and covered from the fire of the enemy. But a position enabling us to see the target readily exposes us also to the enemy's fire. The selection of a suitable firing position which satisfies the actual needs of the moment, requires great experience.

The commander of the 1st Platoon, 2d Company, 63d Infantry, in the fight at Haiduska Mahla (July 30, 1913), directed his platoon on a line of trees. He noticed that as soon as the men reached these trees, they no longer advanced or fired. In order to push the 1st Platoon forward, the supports of the 2d Platoon were sent in. But the same thing occurred when they reached the line of trees. Finally, it was found that the place was under a strong flank fire, which inflicted great losses and brought the advance to a standstill. Thus one position, carelessly chosen, caused the advance to be checked and many lives to be sacrificed.

Fire prepares our forward movement, but that movement has to be checked in order to renew the fire. The positions chosen for these halts should be selected by the commander. Local landmarks may be used in designating these positions, but if no landmarks exist, men must be sent forward to mark them. On reaching the line, every man halts and prepares to fire.

The advance from one firing position to another and the opening of fire from the positions are the most vital problems the troops have to solve. The method of advance must be such as will enable us to keep the entire group in hand, ready for firing.

The smallest ridge in the locality often affords a convenient cover and firing position.

If we intrench during the advance, we lose time and diminish the force of our fire, since some of the men on the firing line must necessarily be employed in intrenching. Moreover, a well intrenched man loses the desire for advancing. Trenches attract men much more than is necessary and make the fire inaccurate. Therefore, intrenching after the advance has come within short range of the enemy, should be done only by order

and in time of great need. Ordinarily, we must rely for cover only on natural objects and on the concentration and superiority of our fire.

Trenches may be used to a great advantage at medium ranges, when we are compelled to suspend the advance for some reason or to resist a hostile counter-attack.

In selecting a firing position, we should ascertain beforehand whether it is exposed to a flanking fire, since changes in the direction of the advance at medium and short ranges are next to impossible.

On October 30, 1912, the 5th Company of the 48th Infantry, while advancing at Lule Burgas Station, fell under a flanking fire from the direction of Muselim. All attempts of the company commander to change the direction of the advance of the first platoon of the company, in order to face the flanking fire to the left, proved futile; the platoon, in its endeavor to change direction, lost fifty per cent and failed in the attempt.

In our last position, we must assume final predominance over the fire of the enemy, and from this position we must hurl ourselves forward with the bayonet. The distance from this position to the enemy will depend on our success in the fire combat, and on the morale of the enemy and of our own troops. Ordinarily, the capture of the enemy's position takes place as the result of the fire combat. Rare are the instances in which the last distance to the enemy may be successfully covered, if in our last position we do not gain fire superiority.

THE SIGNIFICANCE OF MORALE IN THE FIRE COMBAT.

The greater the losses which our fire inflicts upon the enemy, the sooner are his will and resistance crushed. Great losses will fail to affect the courage of the enemy only if his morale is very high. Then and only then will he wait for the bayonet shock. If the advancing troops possess sufficient will power to reach their last position and undertake the fire combat, they are imbued with an invincible spirit and will surely win.

If both sides are moved by the same sense of duty, the bayonet struggle will determine the victory, although the skill and coolness with which the fire is conducted are important factors. The advancing troops are always imbued with the higher spirit,

and if they hurl themselves forward with the bayonet, although they may be numerically weaker, theirs will be the victory.

The cases in which the attack is repulsed are exceptional, although the men sometimes have to hurl themselves even into the enemy's trenches. Usually, the side which is morally weaker retreats, even before it has sustained great losses. It is not the losses caused by the bayonet which decide the success, but the loss of courage which comes from feeling the foot of the enemy already in the trench. Thus we see in battle the numerically weaker side attack and succeed, while the numerically stronger side retreats, even before it has sustained heavy losses.

On October 29, 1912, at 5.00 p. m., six companies of the 48th Infantry were directed to attack Lule Burgas Station. The fire of the Turks was strong, but as yet the companies had sustained no losses. Suddenly some one called out: "Machine guns to the right—look out!" As a result, the companies turned and retreated about a hundred paces. They were led forward again. It was growing dark. The firing ceased, but a casual shot from the revolver of an officer again turned the companies to flight. As these troops were entering battle for the first time, their unworthy action can readily be explained. On that day, it could not have been expected that their morale would be high.

I shall give another example of a different nature. On July 25 and 26, the 13th Company of the 63d Infantry, in the fight at Cerni Vrh near Trn, fell under the cross fire of the enemy. In the course of these two days, the company repulsed more than ten attacks of an enemy three times stronger and sustained twenty-five per cent losses. This success was due to the high morale of the company and to the good tactical use of fire.

During the month of February, 1913, at Kadi-Koj (Chataldja), a Turkish company attacked the outposts of the 10th Division. The weather was cold, foggy, and windy. The strength of the enemy was not known. Confusion arose, and a great many men gave orders for retirement. As a result, the entire 10th Division commenced to retire, without being pursued and without having any losses whatever. A hundred men, chosen by the brave commander of the 16th Infantry, warded off the evil consequences of this unfortunate incident. They had the courage to advance and ascertain what was going on.

On July 28, 1913, at Krastavia Vrh, the 65th Infantry aban-

doned its positions and commenced to retire in disorder. There remained on the positions only thirty brave men, but they were able to check the advance of the enemy during the entire day.

On October 30, 1912, at Muselim (near Lule Burgas), the 5th Company and one half of the 7th Company of the 48th Infantry were surrounded by three Turkish companies and fired on at short range by two batteries. Notwithstanding fifty per cent losses, these companies checked the enemy's advance during the entire day and on the following day again advanced.

In the fight at Bulajir on February 7, 8 and 9, the 22d and 13th Infantry Regiments repulsed the attack of three Turkish divisions and then advanced.

Examples of this description can be given by all participants in the war. Such contradictory results can be explained only by the effects of the morale of the troops and the ability of the officers to direct and utilize the power of fire.

Superiority of fire and the heavy losses which it causes, are the only means by which the spirit of the enemy may be crushed. The higher the morale of the enemy, the more stubborn will be the fire combat and the greater the losses incurred in it. We can never estimate the enemy's losses; and we should remember that if the enemy's morale is high, his losses will not prevent him from holding his position and concealing his physical weakness. His persistence may make us subservient to his will. Persistency is a strong moral quality. To attain our object, we must be imbued by a spirit of determination to persevere to the end. The presence of the officer close to his men on the firing line raises their spirit. The men must see that the officer is watching their fire discipline, following the movements of the enemy, and taking steps to insure success. The men must not be taught so to fear capture that they will precipitously abandon their positions to escape it. They should be taught to consider capture a disgrace only if it is effected before they have expended their last cartridge and their last ounce of physical strength.

Artillery fire has a domoralizing effect, especially that of shrapnel and time-fused shell. Although the latter is less destructive, it sometimes quickly forces men to abandon their positions. Shrapnel fire is more efficacious but exerts less moral influence. In general, artillery fire will not demoralize well disciplined infantry.

The appearance of cavalry has a bad influence on the infantry. In the presence of cavalry, the men must first be calmed, and fire discipline strictly maintained. Several rounds of well aimed fire are sufficient to disorganize any cavalry. Infantry should be taught that one cartridge in each rifle makes it invulnerable to cavalry attack. If the cavalry charges, five or six bombs thrown at the feet of the horses will disorganize it. Transport guards should be armed with about ten bombs for fighting against cavalry. An undue and exaggerated notion of the power of the cavalry is dangerous. The operations of cavalry against well trained infantry are risky, and the infantry should be taught to face it calmly with fire, with full confidence of success. During the first days of the war, a panic broke out in the rear of the army and even among some of the troops, from fear of an imaginary cavalry. This was due to the exaggerated idea of the power and numbers of the Turkish cavalry which our men had received in time of peace.

AMMUNITION SUPPLY.

The ammunition carried by each man, including that carried in the regimental train, amounts to 250 rounds. In the most stubborn battle, if the fire is properly conducted, 200 rounds per man are more than sufficient for one day. If the fire is accurate, one or two hits should be made with every 1,000 cartridges. Therefore, if each man fires an average of 150 rounds, the battalion will fire 150,000 rounds and make 300 hits, and the regiment will make 1,200 hits. This is equivalent to inflicting a 33 1/3 per cent loss on an attacking enemy and will inevitably make him halt his advance and prepare to renew the fight on the following day. We will have left at least forty or fifty rounds per man. The ammunition will be renewed from the company pack horses and the regimental train—this will be the first care of every commanding officer during the night.

Each man carries 150 rounds on his person. Before entering the fight, fifty rounds more should be given him, and the company's pack horses should be sent to replenish from the trains.

In battle, it is usual for the firing line to expend its ammunition quickly. The best means of replenishing it is by the support. Two men are sent from the support to each group on the firing line. These men, besides their own 200 rounds, carry 600 rounds

each in bandoliers. They lie down behind the group and throw the clips to the men. When their 600 rounds are expended, they enter the line themselves.

The company's pack horses should remain near the battalion supports. The battalion commander should take the utmost care to forward ammunition to the firing line in time and to replenish the supply on the pack horses. He will often have occasion to send the horses right up to the firing line to supply ammunition.

If the companies of the battalion are scattered, the horses of each company, under the command of the company quartermaster sergeant, should remain under cover, close to the company supports. The company quartermaster sergeant should keep himself constantly informed as to the location of the pack horses and the trains, for it often happened that the pack horses were lost during an entire day.

Extra clips should be carried in the pockets of the men during the advance and deposited in the trenches when on the defensive.

Strict measures should be taken to prevent the men throwing away their ammunition during long marches. It is well to make frequent checks to see that the men have their required amount of ammunition.

THE CONDUCT OF FIRE.

In the attack, fire should be opened by order of the company commanders; on the defensive, by order of the zone commander. Premature opening of the fire betrays our disposition while the enemy is still long way off and before he has deployed. If the opening of fire is delayed, the enemy is forced to reconnoiter for a longer time, and he may possibly fall into a false direction of advance. Fire is opened early in an engagement only when we wish to make a demonstration to draw the enemy in a false direction, and, in the case of advance guards and reconnaissance detachments, when we wish to force the enemy to deploy and show his intentions.

The Greek infantry, in advancing, frequently employed a long, thin skirmish line, behind which stronger groups marched. The latter fell on our flanks as soon as they could locate them. It is therefore best to employ as few men as possible in the firing line at first, keeping the rest in rear as supports and reserves until it becomes necessary to send them forward to gain the fire super-

iority. But at the decisive moment, every man should be employed in the fire combat. During the advance, the supports should be fed into the firing line as we move forward, and the closer we approach to the enemy, the stronger should our fire become. But if our supports sustain as heavy losses as the firing line, they must be sent forward to the latter.

If the troops fall under a flanking fire, the company commander should endeavor to quiet the men of the advanced groups. He should send a part of his supports forward to look out for the flanking fire. The danger from flanking fire is never so great as to compel us to retire. For every such case there is a remedy, if the commander is sufficiently experienced and cool-headed. In any case, when under flanking fire, we lose more in retiring than in remaining in our positions.

The moment of charging from the last firing position is the most critical period of the engagement. To retire from this position means sure defeat; to advance, although it entails losses, means success. Here perseverance is most needed.

On November 7, 1912, the 4th Infantry, advancing in the direction of Redoubt No. 10 at Chataldja, got within 200 or 300 paces of the enemy. The Turks began to leave their positions. But the 4th Infantry, instead of putting forth its final efforts, felt its great losses and commenced to retire. The enemy returned, and his fire inflicted on the 4th Infantry losses twice as great as would have been sustained had the regiment advanced. A little more courage and stubbornness, and victory would have been assured.

Counter attacks should be attempted only after the enemy has been much weakened by our fire.

The pursuit of a retiring enemy should be conducted by long-range fire. Machine-gun fire is particularly effective in this case.

The direction of the fire by an officer is a difficult operation and almost impossible at medium and short ranges. The officer can only interrupt the fire from time to time and give certain instructions and advice to the men. The bugle should be used as a signal only to cease fire. On hearing it, the men should discontinue their fire and rise a little from their places in order to hear what is said.

Every battalion commander should enter into communication with the commander of the nearest artillery group, because the combined fire of the artillery and infantry is the best guarantee of a successful advance. In the battle at Haidushka Mahla on July 30, 1913, the 2d Battalion attacked the village twice without success. At 3.00 p. m. our artillery was informed of this failure on the part of the battalion and opened fire on the village. Aided by this fire, a third attack was undertaken, and the village was captured with small losses.

Only systematic peace instruction can give us well trained troops of high morale, suitable to modern warfare.

An Infantry Division in the Trenches.[1]

By Captain X.

MY DIVISION

SINCE our armies have been facing the German armies on a front of nearly 1,000 kilometers from the North Sea to the Swiss frontier, the various units have adapted themselves to this new manner of living. Customs and rules have come into being. From one end of this line to the other, for weeks and months, similar needs have brought about similar lines of action. France knows but little of this life of our divisions before the enemy; there is, however, no reason why she should not know it.

THE SECTOR OF THE DIVISION

My division has a fine record of which it is proud. It has been mentioned in army orders; several of its colors have been decorated with the War Cross; it occupies a sector which by heroic combats it has retaken from the enemy.

It has been necessary to organize this sector in order to make it habitable; a big and difficult task of which no communiqué ever gave any idea.

After an assault which has captured the German trenches, the holding of the conquered lines is more costly than the assault itself. Our artillery, before the attack, has smashed, cut up, and overturned everything. After our success, the German artillery has completed the work of destruction; our new positions—German an hour before—are well known to it. We are everywhere exposed to its fire. Our first duty is therefore: dig in and organize. The parapets are reversed; sand bags are brought up; the débris of houses and trunks of trimmed trees are used. In two nights, the hardest part is done; the first line is not yet comfortable, but it is tenable.

This is sufficient to allow methodical work to replace what was done at first in a makeshift manner. The commanding officer draws on a map the programme of organization and superintends its execution hour by hour: advanced trenches, support trenches,

[1]Translated from *L'Illustration*, October 9, 1915.

second-line trenches, zigzags, and shelters. Everything in this programme is necessary; the trenches for firing, the zigzags for communication, the shelters to live in. Work is possible only at night, and even in a fairly short sector, the amount to be done is enormous; when finished, there will be at least forty kilometers of trenches and zigzags, not to speak of shelters, which, dug out 10 meters below the surface, require the excavation of thousands of cubic meters of earth. Everybody gives a hand, trench-guard troops, second-line troops, territorial troops, engineers, the latter both working themselves and furnishing overseers to the other elements.

A good trench must have depth to furnish concealment, a parapet for protection, and a banquette for firing. In addition, there must be placed in front of it accessory defences, fixed wire entanglements, chevaux de frise or movable wire entanglements, to stop the attack of the enemy, should one be made. The trench comprises in addition other interior installations, such as emplacements for machine guns and light cannon, depots for cartridges, petards, grenades and illuminating rockets, dug-outs where the men sleep when not at the loopholes, draining gutters, and discreetly placed in the bend of a blind trench, the necessary latrines.

When all this is finished, the trench is fit; it only remains to keep it is good condition against the enemy, whose grenades and shells damage the parapets, against rain—the worst enemy of our subterranean towns—and against the occupants whose continual comings and goings wear down the walls and the floor.

A good zigzag must furnish complete invisibility to those passing through it; it must therefore be deep and well defiladed; when its depth or its cover is insufficient, artificial obstacles must intercept the view of the enemy. In addition, it is necessary that passage be possible not only for pedestrians but also for litters. The crumbling of the earth walls and the formation of mud holes must be avoided. For this reason, every self-respecting organization revets the walls with hurdles or gabions and places along the bottom those movable wooden floors like small gang planks which the Germans used before us and which we call "gratings." Work on the zigzags farther from the enemy is more difficult than that near the first lines, for the German artillery can fire on the former without risking hitting its own trenches—and it does not neglect to do so. A single shovel of

earth thrown in daylight from the zigzags on the parapet is sufficient to draw fire.

One thing only is required of the shelters: to shelter. Some, near the first line, are modest; they are too near the enemy to move much earth; one must be satisfied to be protected against the little fellows, that is, the 77's. If a big shell comes (105, 150, 210), the shelter does not hold. We know it and are resigned to it; it is God's will. Further back, the shelters are made stronger and deeper; they are dug to a depth of 10 or 15 meters, and are roofed with tree trunks and earth; the interior is furnished with bedsteads of wirework or laths, so that one can sleep there soundly.

Some of these shelters are in cellars, and when—as in our case—the Germans have inhabited them, special measures have to be taken to do away with the vermin. . . .

To give a complete idea of the sector, the telephone lines must not be forgotten; first the telephones of the infantry, connecting company commanders with their majors, battalion commanders with colonels, colonels with the brigades, the brigades with the division; then the telephones of the artillery, connecting observers with batteries, batteries with the divisional artillery, the infantry with the latter, and it in turn with the heavy artillery; for each division, this means a network of telephone wire of about 200 kilometers. Add to this the dressing stations, where the litter-bearers are stationed, the posts of command for the officers with their "agents de liaison" and their telephone operators, the emplacements for the batteries, the garages where the rolling kitchens, horses, and sanitary automobiles are installed, the driven wells by which subsoil water is obtained for the supply of the troops; you can then realize what is meant by the sector of a division.

The sector is a small world entirely created by the officers and soldiers, and which, for weeks and months, becomes the whole world for them. They feel at home there, are proud to improve, finish, and decorate it. Each trench, each zigzag has its name, that of an officer, often a dead officer, so that the map of the sector, with the names written on it, looks like the Golden Book of the Division, and the signs at each crossing evoke for those passing by the image of a loved or regretted chief.

THE WORK OF THE DIVISION

An infantry division of two brigades includes, in time of war, a variable number of regiments, some territorial troops, a company of engineers, two squadrons, and artillery the importance of which varies according to the needs. The life which these different elements lead in the sector, is regulated with a precision which ensures, by a minute distribution of the work, the maximum of efficiency.

The infantry is divided into two parts, first-line troops and reserves. The first-line troops are not all in the trenches. One-third at least are three or four kilometers in rear of the line of fire, in cantonments which are not protected from artillery projectiles but on which the enemy in fact almost never fires, as such fire would occasion an expenditure of ammunition quite out of proportion to the results obtained. The other two-thirds are in the trenches, either in the first line proper or in the following lines. The troops on guard in the trenches are exposed to the hardships of night fighting such as attacks and combats with petards, but not to artillery fire; for they are too near the Germans. The supporting troops, except in case of serious attacks requiring their intervention, do not suffer from night surprises, but they are exposed to bombardment, and notwithstanding all precautions, often lose more men than their comrades in the first line.

These various duties are equally divided by the continual relief of troops. In a period of twelve days, a company of the first-line regiment passes three days in front of the Germans, three days in a cantonment much exposed to bombardment, and six days in a quiet cantonment. As these twelve days in the first line are followed by twelve days in reserve, it may be said that a company, save in exceptional cases, passes three days on the alert, six days in danger, and eighteen days in security. Of course, this rule is not an absolute one, and the schedule varies from division to division; it is, however, the most frequent case in a normal sector.

When facing the Germans, the men are quiet during the day; they eat and drink at regular hours, thanks to the zeal and punctuality of the regimental cooks, and sleep their full allowance. At night, on the contrary, everybody is more or less on watch, or rather, nobody sleeps quietly. The second line has other duties; for it furnishes nearly all the workers needed for the organization

of the sector. This night work is often dangerous. When digging in the open, the men are exposed not only to shells, but also to chance bullets. The earth is hard to move, and the country unhealthful. When day comes, each man goes back to his shelter and rests, without other obligation than the usual fatigue duties.

In this night work, a hard task falls to two organizations already mentioned: the engineers and the territorials. The sappers labor hard; on the days of attack, they advance with the first line; the rest of the time, owing to their limited numbers, their duties are harder than those of the infantry. The territorials are full of devotion and calm courage. They run the same risks as the younger troops each night in building earthworks or in burying the dead. They perform other services, do forestry work, mow the meadows, trace tracks; they are the factotums of the division and are not often idle.

The cavalry, in cantonment at the rear, takes its turn with the infantry in the trenches. It arrives in motor busses, leaves in the same way, and is today quite familiar with the conditions of siege warfare.

The artillery, though less tried by fire than infantry, have a tiring duty on account of their small number and because obliged to be continually in action. They are distributed between the battery positions and the cantonments. Day and night they are on the watch, and they fire either as the result of information about the enemy sent them by their observers or at the demand of the infantry. . . .

These different organizations are directed by the staff of the division. The staff of a division is quite different from the staff of superior units. To begin with, it is reduced to a very small number of officers. Next, these officers live continually with the troops to draw up the programme of work to be done, and to supervise its execution, they are obliged to be at all hours in the trenches. To watch the enemy and reconnoiter his defences, they must be familiar with all the first-line observing stations. The headquarters from which they send their orders is always situated in the zone of fire. Each time an action takes place, they are with the general in an advanced shelter, from which they are sent out over the battlefield to ensure liaison between the units and to watch with their own eyes the development of the combat. In

a word, the staff of a division is an instrument of action rather than an organization for study. Conceptions of the action as a whole are beyond its province. The immediate preparation for the battle and its execution are its rôle.

It is also its duty to keep up the physical and moral condition of the troops—particularly those who, taking their turn in reserve, are prone to consider themselves as troops at rest. It may be called rest, as they are for twelve days out of reach of projectiles; but it is a moral, not physical rest. There is more drilling done in reserve than in the first line; all the men know it and recognize its necessity. In the trenches, when not fighting, discipline unavoidably relaxes. The men lose the habit of maneuvering and marching and the qualities of cohesion indispensable for an attack. These qualities are again instilled and developed during the so-called periods of rest. Each morning, there is a march of fifteen kilometers, or a company, battalion, regimental, or brigade exercise. Some are drilled with the bayonet, others at throwing petards; here men are practicing at rapidly reversing the parapet of a trench, there others shoot, run, crawl. The clacking of machine guns awakens the quiet country which war has not touched.

For several months past, it may be said that each day half the French Army has been at drill, while the other half has been in the trenches. This continual training explains the incomparable fighting qualities which our troops have acquired during fourteen months of war.

THE SOUL OF THE DIVISION

These fourteen months of war have fortified the soul as well as strengthened the body. A division is morally like a person; it has its physiognomy, its pride, its traditions, its esprit. Each unit prides itself on its patrimony of memories from which springs an ever living source of emulation. One regiment, at the beginning of the campaign, held out for ten hours under the enemy's terrible fire. Another alone took over 1,500 prisoners. This one's flag is nothing but a sublime rag. At present, there is not a man who has not engraved on his memory the dates of these exploits. The veterans took part in them, the recruits have gathered from their elders the story which will in time become legendary, almost historical, truth.

In this amalgam of men of all ages who today form our regiments, moral unity is based on this community of trials and proud feats. The infantryman of September, 1915, is well aware of all the dangers which await him. His courage is not the result of inexperience or of temerity; calm and well poised, it is seen to be the highest expression of willing self-sacrifice.

The big shell which surprises a man while sleeping in his shelter or passing through a zigzag, is not anticipated; it is the risk to be run, reduced to a minimum by the thorough organization of the sector and not to be reckoned among the probabilities. The danger from bullets, when the parapet has the required thickness, is small. Petards are the enemy to be most feared in the first line; they cause awful wounds, and every man knows that there is but one efficient tactics against them: anticipate the enemy, or if anticipated by him, crush him by a return stronger than the attack.

Habitual impassibility on the one hand, instructive initiative on the other, these are the state of mind that war has given the infantryman. When the hour of attack comes, in what frame of mind will the terrible effort required of his physical strength and moral energy find him? Here again he is animated by the same tranquil coolness; he reasons and he judges. If the artillery has powerfully prepared the assault, if wide breaches have been made in the enemy's defences, if a sufficient number of machine guns seem to have been destroyed, if finally an operation on a large scale is in question, where everyone goes into action, the remaining risks—and they are terrible—are affronted with admirable dash.

The heroic minute when the attacking sections, their feet already on the sortie steps, spring from the trenches at a sign from their officers, is awaited by the men with such self-sacrifice that, at any other time, you would kneel before them. It is not the burning impulse of action already begun, when each one lives on his nerves; it is a decision calmly taken to face death for their country. During the hours of artillery preparation, they have had time to reflect, and it is after reflection, with the full knowledge of duty and peril, that these heroes coolly spring into the open from their shelters. . . .

Improvised Armies.[1]

By Vicomte de Civry.

PREFACE.

THERE are peoples and epochs which even the lightning strikes without illuminating. When the tempest has passed, all those who are not dead, rise up and look around in astonishment without learning why they fell. That is what has happened to France too often since '92. That is what every thinking observer could see exemplified after the cataclysm of 1870-71.

When the survivors had finished burying their dead and mourning them, when the masons had repaired the breached walls and removed the bullet marks, even before all the ruins had been carried away or restored, the fine talkers had made a platform of all the stones which they found under their feet and commenced to celebrate the innumerable marvels of progress, the incomparable superiority of the century, and the indescribable grandeurs of the Republic.

In the midst of this deafening concert of congratulations and praises, it has seemed to us that it was opportune for all those who are not wilfully blind and who have still some concern for the country to bring out one of the principal causes of our recent disasters. It is not the only one assuredly; it pertains to the military, and the principal causes of our defeats pertain to the moral, social, and political order. But this cause has a profound affinity with that spirit of pride and revolt which regards all discipline, all obedience, all self-denial before a legitimate authority and a public duty, as a humiliation and a degradation.

In the Utopian days which we are passing through, the great doctors of the future have commenced by saying:

An immutable religion is a fairy tale;

A durable government is fetish of slaves;

An immovable magistracy is a prejudice of the old régime.

They afterwards added:

A permanent army is a relic of feudalism.

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[1]Translated for the INFANTRY JOURNAL from *Les Armées Improvisées*, Paris, Librairie Militaire de J. Dumaine, 1882.

And the young adulators of the new France, joining the toothless admirers of the National Guard, strive to demonstrate that it is as easy to improvise an army as a mob.

To refute this sophism, which, if it should triumph, would be the death of the country, nothing could be more conclusive, more convincing, more overwhelming, than the simple picture of what the volunteer battalions and improvised armies have been able to accomplish in this century of revolutions.

Such is the thought which has inspired these rapid but scrupulously exact pages. In order that this demonstration by the facts might be more powerful and complete, it has not been limited to France alone; it has been extended to include Germany, England, and Spain.

I. THE VOLUNTEERS OF 1792.

On the day following Sedan, France no longer had an army capable of defending it with serious hopes of success. The Army of Metz, after glorious but fruitless attempts, was condemned to a blockade without issue; it found itself shut in from all directions, and there was no longer any French corps with which it could join hands by a valiant sortie. The Army of Paris was likewise isolated and could not for a long time hope for effective succor from the outside.

There remained, it is true, the glorious and fantastic legend of the volunteers of '92, of those republicans, who without shoes, without bread, and almost without arms, had held their own against all Europe. With this legend and the three million men which France could arm, there was more than enough, it was believed, to throw the Prussians back over the Rhine or else to crush them to the last man. Alas! the brutal reality was not long in giving a cruel denial to this heroic legend which during three-quarters of a century had penetrated even to the most distant village of France, which had served as an oratorical theme to all the flatterers of the people, and which in the hour of peril deceived even the most loyal servants of the country.

It is time to examine coolly this legend, which is rashly accepted by those who with no more profound examination reject and deny the Scriptures. It is today a duty to do justice to it in order that in the future, it may not engender disasters like those of 1870 and 1871. It is this legend which has prevented France

from having, like Germany, an army always ready to meet the enemy, a disciplined army, trained and capable of preventing itself from being surprised by any attack, however formidable. It is this legend which paralyzed Marshal Niel when he wanted to organized and establish that territorial army which two years later could have saved France. It is this legend which caused the republican Charrier to say before the bar of the Legislative Assembly:

What is the Army? It is all France; all the citizens are the army. Why, then, recruit an army which would devour the country? At the sound of the tocsin, all patriots will be under arms.

We have seen whether the tocsin was sufficient in 1870 to put the foreigner to flight when he invaded half of France.

It remains to be seen what the volunteers of 1792 really did.

They who think that the armies of '92 were a sudden agglomeration of improvised soldiers, of soldiers come forth from the earth at the voice of the Republic, are mad. The soldiers who bore off the victories of the Republic were the soldiers of the monarchy, trained, instructed, disciplined by the pupils and successors of Turenne, Condé, Luxembourg, and Villars. The officers only were changed, and however new and young they may have been, it was not Robespierre who taught them the art of war. Napoleon was a student of the royal and military school of Brienne, and Dumouriez, Biron, Lückner, Kellermann, Hoche, Marceau, Augereau, Desaix, Pichegru, Macdonald, Championnet, Jourdan, Murat, Davout, Kléber, Custine Sérurier, Victor, Moncey, had no more than he, learned to handle arms at the foot of the guillotine.

These are the generals of the Republic. They did not, as complacent and unscrupulous historians have sought to establish, become men of genius from one day to the next through the mere act of quitting the office and the shop for the army and exchanging the woolen shoulder knots for the gold and strapping on a great clattering saber and donning a hat with a tricolor plume. This disguise produced, it is true, a numerous collection of incapable generals, who too often compromised the success of operations, caused their men to massacred and whose names should rest in the obscurity where the just contempt of history has buried them.

For some, an exception may be made; for their odious memories cannot be too firmly nailed to the pillory of public opinion; such are Henriot, Ronsin, Rossignol and Santerre.

As for the improvised soldiers, the invincible volunteers, the famous battalions of *fédérés,* no doubt is possible after the unanimous and unappealable judgment which their leaders and contemporaries have given. This judgment is filed in the archives of the ministry of war, and anyone can consult there the voluminous and massive records of these so-called conquerors of Europe. It suffices to cite here three or four sufficiently eloquent extracts.

From the Army of the Rhine, General Biron wrote to Citizen Servan, appointed minister of war by the Legislative Assembly—

Sending me these national volunteers is absolutely to deprive me of all means of defense while doubling the consumption of supplies. I have already much too many of those who eat and much too few of those who serve.

From the Army of Moselle, General Beurnonville, who nevertheless loved the republican fanfare and popularity, wrote to Citizen Pache, minister of war—

The desertion of the volunteers is such that a company was this morning reduced to one sub-lieutenant and one sergeant.

Two days later, he again wrote to the same Citizen Pache—

There is not a day since I have been on the march when 100 to 150 volunteers do not desert; and I do not even except the officers. If this continues, it is very probable that I will arrive before Trèves with only my regular troops.

General Duhause, commander of the *fédérés,* wrote to the Citizen Minister Servan—

Six hundred volunteers have just told me: "We do not want to go into camp, we do not want rice, we do not want issue bread; we want white bread, we want twenty sous a day, or we will not serve." . . . No obedience, no authority; your wilful volunteers are good for nothing.

The following letter from General Neuilly to Dumouriez after the battle of Nerwinde completes the picture—

On their arrival at the rendezvous, the volunteers observed no order of battle, they danced with wild cries instead of observing the silence which their mission required, up to the moment when

a corps of 400 horsemen and about 200 infantrymen, more disposed to surrender and escape than fight, decisively put them to flight. A deputation of these fugitives from the field of battle has left for Paris to say that they were betrayed, a cry which they have made wherever they have passed. . . .

What an abyss between this picture taken on the spot and the legend created partly by national vanity and partly by party spirit!

Here is finally the most favorable and most moderate judgment which a patriot above suspicion, the Adjutant General Vieusseux, has rendered of these too celebrated volunteers—

ARMY OF THE RHINE,
Camp at Neukirch, May 15, 1792.

The volunteer has indeed a momentary courage, the fruit of impetuosity and national vivacity; but as soon as the first instant of ardor has passed, discouragement follows and is propagated with a rapidity which is unexampled elsewhere. He always lacks that cool and reflective courage, that calm in danger, that patience which surmounts all difficulties and is proof against obstacles. . .

The reports of all general officers are in accord in condemning the general conduct of these so-called patriots, and invariably they terminate with these same words—

"Above all, do not send me volunteers!"

What could be more crushing for the hackneyed declamation, which constantly glorifies anarchy, than these corroborative reports?—

The volunteers will not subject themselves to any discipline; they are the scourge of the householders, and they ravage our countrysides. Our volunteers are always naked; a soldier scarcely receives his shoes before he goes and sells them; some even sell their coats, their rifles, burn their powder and insult their fellow citizens; the spirit of cupidity is behind everything, runs everything, and honor is no longer anything. As for us, your colleagues, it is impossible for us to stand the spectacle of such disorders, and we beg you to have us recalled to the bosom of the convention.

Who signed this document? Two members of the Convention of Delegates, in 1793, at the Armies of the North; and one of these two delegates was—Carnot! Yes, it was Carnot who in a series of reports, sent from the month of April to the month of June, 1793, set forth in these energetic terms the uselessness of

these volunteers, so intoxicated by revolutionary rhetoric. Many others have united their voices to this great voice and form a sort of clamor heard by everyone except the Thiers, Louis Blanc, Victor Hugo, Michelet, Duruy, Henri Martin, etc., who have been deceiving France for half a century, lying in the face of history, with this old legend of volunteer thunderbolts.

The generals, the commanders, the officers, the commissaries, all those, in fine, who saw things at short range and who, in contrast with pride-inflated politicians, do not indulge in empty words, reveal the same demoralization, the same disgraces, the same misconduct.

After Carnot, the Convention heard Kellermann and Dubois-Crancé. The evidence speaks in their patriotic words, "but even the evidence is suspected by a people stricken with madness. There are times when good sense is a crime. How can the truths of experience and reason be made to prevail when the populace is stupified with furious declamation, when the minister of war is Bouchotte or Ronsin, and when the vilest demagogues send victorious generals to the guillotine?"

Nevertheless, little by little, in spite of the gibbets of Custine and Biron, the complaints of Carnot, Kellermann, Beurnonville, Dubois-Crancé, Merlin (de Douai), Gasparin, Schérer and a score of others finally get the better of the stupid clamor. There will soon be no more volunteer battalions nor *levées en masse*. The Convention in spite of the Jacobins decrees the brigadement; the work of military restoration progresses from month to month.

It was the Directory that re-established the brigades; it was the First Consul who re-formed the regiments. The old tradition of honor in which lay the strength of the former France, becomes associated with the principles of the new France under the flag of Arcola and Marengo.

Napoleon knew better than anyone the value of these national volunteers, the so-called representatives of the enthusiasm of the fatherland, who were constantly, at Valmy, at Jemmapes, at Nerwinde, the stumbling block, the curse, and the peril of the intelligent combinations of Dumouriez. So he needs only two lines to sum up their total history:

The national guards go toward the enemy, it is true; but they always come back much more quickly.

Ignorant writers have said that the armies of 1792 had a new tactics which they opposed to the Prussian tactics, evolved by Frederick the Great, and adopted and perfected by the armies of all Europe. They repeated to satiety that this new method was the result of the enthusiasm of the Revolution. Nothing could be more untrue or absurd than to seek to show that the exaltation of the Revolution could create any method whatever. In all epochs, revolutionary exaltation has engendered anarchy, confusion, chaos, dishonor and madness, but it has indeed never produced any other method than that of "save himself who can." For all these improvised organizations, feeling themselves their lack of solidity, never approach the field of battle but with a trembling hesitation or an artificial exaltation, both of which lead to the same end—disorder and impotence. Although isolated exploits—deeds taken here and there but which are generally without military importance—may be cited, any open-minded man will recognize that it has been almost always impossible for irregular troops to vanquish a regular soldiery, even with a numerical superiority of ten to one. Under the impulse of great political and religious passions characterized by the most ardent enthusiasm, some remarkable engagements have indeed been fought by volunteers. There may be placed in the front rank those which the Scotch fought to return to the Stuarts the crown which the Revolution of 1688 had taken away from them. They bore off at one time the victories of Preston-Pans, Falkirk, and Cliftonmoor, but they could not avoid the final disaster of the battle of Culloden, which was the ruin of the Pretender Charles Edward and the decisive triumph of the House of Brunswick. During the wars of the Vendée, the Lescures, the Rochejaqueleins, the Bonchamps, the Stofflets, the Elbées, the Charettes, the Cathelineaus and the d'Autichamps had some brilliant successes, because they had the heroism of faith, because they fought for God at the same time as for the King, but these successes were of short duration. They vanished before the more serious organization, the methodical operations, and the flank or turning attacks of the republican generals, which they could not resist.

II. FREDERICK WILLIAM, SOVEREIGN DUKE OF BRUNSWICK.

The most illustrious example of what a corps of volunteers can attempt against the invader of the fatherland is without

doubt that of Frederick William, Sovereign Duke of Brunswick, against Napoleon.

Head of the first military race of Europe, of that race which after having fought against Charlemagne, had won his imperial crown, of that race which had possessed nearly all Germany, and which had fought for ten centuries, he suddenly found himself without a throne and without a country and with only his sword.

But his sword was the one which his father had carried at Jena when he fought his last battle with the victor of Austerlitz after having been the glorious comrade-in-arms of Frederick the Great; it was the sword which in the hands of Emperor Otho of Brunswick had fought against Phillip Augustus at Bouvines; it was the sword which in the hands of Henry the Lion had fought against Frederick Barbarosa; it was the sword which in the hands of Witikind had defended German independence against the great Emperor of the Franks; it was finally the sword which in the hands of Odoacer had given the final blow to the Roman Empire.

To the indomitable bravery which the banished prince drew from his blood, was added all the energy of the despair which the misfortunes of his family and his country inspired in him. His hair and beard had whitened in one night when his father, brought back bleeding from the field of Jena and compelled to flee on a litter, went to die far from his country in a forgotten village.

On the next day he saw his domains, his palaces, his birthplace fall into the hands of him who said: "The House of Brunswick has ceased to reign. Let the Duke of Brunswick go and seek another country beyond the sea. Wherever my troops may find him, they will take him prisoner." His mother, a mourning widow, had to go and seek "that other country" beyond the sea; his two sons, still children, wandered over Europe; his young wife had just died in the anguish of flight and exile.

Each of Napoleon's victories had been an unhealable wound to his heart.

Thus from all the hamlets of conquered Germany and from almost all the thrones of Europe, a current of admiration and sympathy went out to him, when the world saw him place upon his brow and breast the skull and cross-bones, and then marked with these emblems of mourning, place himself at the head of his black hussars and summon to the deliverance of their native

soil all those who still felt capable of arising at the voice of a Guelph.

Through the immense prestige of his name, his bravery, and his misfortunes, he succeeded in recruiting from the different principalities of his country and especially from his duchy of Oels in Silesia a corps of volunteers ready to follow him everywhere and to shed with him even the last drop of their blood.

The victory of Wagram, which finished what those of Austerlitz and Jena had so triumphantly commenced, did not discourage him. When Austria had laid down her arms, he continued to struggle with his "death's-head hussars" against the new Cæsar who bloody route was strewn with laurels and crowns. At the head of the small phalanx which he electrified by his words and his example, in the midst of a subdued and trembling Germany, he struggled alone, indefatigable, elusive, displaying a skill, an audacity and a courage which wrung applause from all Europe and gained him the name of the New Arminius.

After having conducted his handful of valiant soldiers which was called the "Black Corps" across Bohemia and Saxony by a most skillful and daring march; after having taken Dresden, Halle, Leipzig—Leipzig, where a bloody battle was to give him back his crown four years later; after having skirted along his principality of Blanckenberg in the shade of the forests and mountains of the Hartz; after having gained possession of Halberstadt and surprising there the finest regiment of the Westphalian Army, at the cost of a hand-to-hand struggle and of two horses shot under him, he camped one night at the very gates of Brunswick, where Jerome Bonaparte, who had become ruler of his domains, reigned by the grace and with the cannon of his all-powerful brother.

But this brilliant epic, however wonderful, was to terminate only in a triumphant retreat. In vain, the grandchild of Witikind awaited for new volunteers to assemble from all corners of the conquered country. The terror which the name of Napoleon inspired, was so great that it paralyzed patriotism itself. Instead of auxiliaries, he saw assembling from all sides not only the Westphalian troops of King Jerome, but also the Dutch, Danish, and Saxon troops, who had become the servants of the conqueror and who, coming from the east, the west, the north, and the south, hastened towards Brunswick to surround the defender of Germany.

Not being so mad as to dream of sustaining such a shock, he refused the offers of his faithful Brunswickians, who wanted to open to him the gates of the palace of his ancestors, and no longer considered any other plan than that of cutting his way through to the Baltic.

At a short distance from his capital (at Oelper on the Ocker), he overthrew with the 1,500 men remaining to him the 6,000 men of General Reubell whom he almost made prisoner; two days later he entered Hanover, captured four guns there, crossed the Weser and the Grand Duchy of Oldenburg, destroyed the bridges behind him, turned off the road to Bremen, then escaping all the forces launched in pursuit and pretending by a skillful strategem to throw his forces into East Frisia, he suddenly appeared at the mouth of the Weser, seized some merchant vessels in the port of Elsfleth, embarked his men on them, himself the last to board the ship, and gained the high seas after a victorious march of 150 leagues.

When the Westphalian Army arrived on the banks, it could only salute with its salvos of artillery the prince with the somber uniform, who eight days later landed in England, where a triumphal reception awaited him and which he was soon to leave for Portugal and Spain to meet again and oppose with his indefatigable volunteers the soldiers of Napoleon.

This duel to the death between these two terrible champions was only to finish at Waterloo; the one lost his life there, the other the empire of the world.

This is the description of the death of the hero which Lord Byron gives with his elegant conciseness:

> Within a windowed niche of that high hall
> Sate Brunswick's fated chieftain; he did hear
> That sound the first amidst the festival
> And caught its tone with Death's prophetic ear;
> And when they smiled because he deemed it near,
> His heart more truly knew that peal too well
> Which stretched his father on a bloody bier
> And roused the vengeance, blood alone could quell;
> He rushed into the field and, foremost fighting, fell.

Certainly this was a leader of volunteers such as but few are found in a century. He bore on his black dolman the liberty, the glory, all the memories and all the hopes of a fatherland in mourning. He was the representative and the avenger of all conquered peoples; he was the close relative of all conquered kings.

His exploits, sung by Lord Byron in immortal verse, were worthy of inspiring Tasso and Dante.

But, nevertheless, under such a captain, that legion of volunteers who were nearly all old soldiers and who were all heroes, could not wrest a single inch of German soil from the regular armies which had invaded it.

1813.

Even Napoleon, however incomparable his genius, did not fail to feel the impotence of improvised armies.

Eighteen Hundred and Thirteen had arrived. The army which had made the Russian campaign, had been almost entirely buried in the snow; the few who had survived, formed only a nucleus of veterans, who were soon lost in an ocean of conscripts. France had no more old soldiers, and a new struggle had to be waged against Europe. The army which in 1792 had conquered at Jemmapes and Valmy only through the officers of the *ancien régime*, which had been destroyed by the action of the Revolution, and which had been re-established by Carnot and Bonaparte, honored forever by the First Consul and intoxicated with glory by the Emperor—that army no longer existed.

What steps will the Great Captain, the very genius of organization, take to oppose soldiers to the invasion?

He also—he who conquered and crushed the Revolution with his spurred boot—will try the the methods of the Revolution, having no others at hand. He will employ improvised armies!

In vain he multiplies his activities. His genius and his prestige still gain him some victories. But soon reverses supervene; his generals who up to that time had been accustomed to triumphing over all obstacles, complain of the deficiency of the army, its ignorance, its sluggishness, its lack of discipline, its continual desertions, its lack of dash; and the day after the battle of Leipzig which had just torn the crown from the brow of Jerome Bonaparte and returned it to the son of him who was conquered at Jena, the Conqueror himself excalimed in affright: "I need men and not children. Men are necessary to defend France."

In spite of his dazzling victories, Napoleon was brought to ruin and defeat because he no longer had his old army and his war-seasoned veterans, because soldiers cannot be improvised, and because armies cannot be improvised.

(*To be continued.*)

An Infantry Charge.[1]

By C. E. W. Bean.

THIS week I watched a charge of Australian infantry. It was a brigade of seasoned infantry, not the 3d Brigade which made a wonderful charge on the day of landing, but another brigade of the same old division, which I make no apology for now referring to as our famous 1st Division. This charge was made in quite different country, under quite different conditions, of which, perhaps, it is too early to give exact details.

I had been watching for three days the attack by infantry of other famous armies on a strong Turkish position. Early on this particular day an Australian brigade, which was encamped at the rear under no fire worse than that of a few spent bullets, was ordered to move up into position to support, if necessary, a certain portion of the attack. Immediately they moved off to a point about 600 yards behind the fire trenches, where they quickly dug in and waited all day. The enemy burst a few shrapnel shells over this camp later, but the only casualty was one man, who was hit by the case of a shell and killed instantly. It appeared likely that they would remain there all night, when suddenly at 5 o'clock, the order came to be in fighting column in line with the New Zealand Brigade and to be advancing against the enemy by 5.30.

This order was sent out with the utmost speed by the brigadier. Presently, at 5.15, the allied batteries began shelling the enemy's line. The noise was tremendous. White puffs of shrapnel, red clouds of whipped-up dust, black and green fumes of high explosives, burst again and again from the line along which the enemy's trenches lay, whipped up by the hail of shell from our guns firing over our heads. The men were busy putting on their packs and falling in. Everyone knew that this bombardment was preparatory to our advance, which must be punctual on the instant, or the whole operation would be mistimed. Just on the hour named, the leading companies of the two leading battalions came out of the last scrap of shelter and up the gradual slope

[1]Reprinted from *The Australian Military Journal*, July, 1915. Written at Gabe Tepe, May 9, 1915.

of a low plateau, across which, about 1,200 yards away, must have been the enemy's trenches, although invisible at that distance.

Four hundred yards ahead was the British fire trench, the most advanced position yet reached but not yet connected by communication trenches. That fire trench when reached was the only scrap of cover in 1,200 yards, the whole plateau being covered by a low growth not higher than a man's feet. The moment the leading companies appeared, they were met with a steady fire, always increasing as they came up the slope. Here and there men dropped, but as yet only a few, and the line took not the slightest notice. Fighting column is a splendid formation for an advance up to the range of fire, being small groups of men advancing at wide intervals, each set of groups forming successive lines advancing towards the enemy. As the limits of fire are reached, these groups suddenly extend into single lines before any harm is done and as the bullets begin to whizz thicker. This operation was carried out in perfect order by company after company, exactly as had been done a thousand times at Mena Camp. The foremost lines had only rifle fire as yet to face, but everybody knew that shrapnel would come as sure as fate, and as the later companies of the first two battalions were coming out of a few scraggy trees—something like ti-trees—at the bottom of the slope which formed the only semblance of cover, down came the shrapnel. First, a whizz on that descending scale we have grown to know so well, then "bang," and the dust was whipped up into curling clouds right between the advancing sections. The first burst was followed by a perfect hail of shrapnel. It is difficult at such moments to count the exact number of bursts, but my impression was that they must have come from three batteries of four guns firing salvoes as fast as they could be served.

The moment they opened, the allied guns got on them, and for some minutes the uproar was so deafening that it was impossible to hear the whizz of passing bullets. The universe seemed to be buffeted first from one side then from another, as if the giants were battering its empty sides with sledge-hammers, and out of the midst of it came that infantry as if nothing was happening. Columns of pink dust were whipped up between sections, sometimes hiding portions of them completely from view, but the next moment they appeared out of the turmoil marching stolidly uphill. Sometimes when shrapnel burst in front of them you

would see some youngster fend his forehead with his elbow, and come through rolling dust clouds almost blindly. But I did not notice one man falter, and, curiously enough, I believe that the shrapnel did little actual harm. It must have hit some men, of course, but I saw none fall. There never could be a better object-lesson of the maxim that the best way to avoid shrapnel is by going forward.

The infantry went the greater part of the distance up to the fire trench at a run. Within two or three minutes of beginning the advance, the first line was up and into that trench. There they squeezed down between the British, who were manning it, or lay down for a moment panting on the surface behind it, to some extent sheltered by the parapet. Bullets were chipping earth off the top of the parapet into the faces of the men below. Little puffs of dust were flung up on every side all over the surface of the plateau. A bit of wood lying on the ground in front was flung up feet into the air, as if bullets were playing tip-cat. The men took a three-minutes' breather, and then the brigadier who had so far led the charge himself, jumped up on the parapet, "Now, then; on, Australians!" he said, waving his periscope, just a bit of wood with two broken bits of looking glass, which he carried in his hand. The men gathered themselves up, and shouting, "On, Australians! Come on, Australians!" swept over the parapet like a whirlwind, and out across that deadly plateau. A perfect storm of bullets met them, and men dropped fast. They must have reached the objective nearly 500 yards beyond the fire trench, within three or four minutes at most. When they got there, they simply flung themselves down and dug with entrenching tools. Many took off their packs and placed them in front of their heads. After they had been there for a quarter of an hour, the troops swept up line on line. They halted a few minutes at the fire trench, as the first had done, but always swept beyond it in a few minutes with a cheer, and the shout of, "On, Australians!"

I have seen many troops at work during the last week, I have seen many attacks by all sorts of soldiers, but I have never seen anything approaching the swiftness or dash of that advance. The Australian brigade was in position from an hour to an hour and three-quarters before the troops on its left, whilst most of the troops on the right did not get within 400 yards of it that

night. The brigade could not have advanced further because the Turks were opposite this gap on the right, and bullets began to come in from behind the flank. I am told that when the troops reached the advanced line there was not the least fear of their giving ground. On the contrary, immediately cheering to find supporting lines coming in amongst them and knowing that other supporting battalions of the same brigade were close up behind, they began to dig in in broad daylight. They were in high spirits, laughing and yarning over all sorts of things—what people in Australia were thinking, incidents of the day and of the landing; every sort of topic, in fact, except the charge they had just made. Within half an hour they had, in many parts, cover from which nothing could have stirred them.

Book Reviews.

Journal of Impressions in Belgium. By May Sinclair. New York: The Macmillan Company, 1915. Cloth, 8vo, 294 pages. Price, $1.50.

The avalanche of literature on the war still continues, and we are asked to read the good, the bad, the prejudiced, and the fair-minded from the pen of the military man as well as the self-imposed military critic. There are, indeed, many of the the last. In this volume, however, we are asked to accompany the well known novelist, May Sinclair, through a number of "impressions," which she claims are at least "psychologically accurate."

It is the barest outline of a diary; some of the evidence has been set down days after the event, for she finally found herself, due to press of circumstances, four months behind in setting down the events in the last days of her journal.

Notwithstanding the probable lack of accuracy in the stage setting of the military events, certain things in Miss Sinclair's everyday doings are strongly impressed upon us. These are principally the lack of preparedness existing in the Belgian army in respect to the organization of her sanitary troops and prompt arrangements for handling the sick and wounded.

Her journey to Antwerp furnishes an interesting view of the absolutely chaotic condition of affairs in Belgium, Antwerp, and Ghent, as well as in many other of the cities. The lack of a common directing hand was shown by the indefinite orders received and long waits before the field ambulances were sent out.

Throughout the book, one is particularly struck with the widespread idea existing among all Belgians that English troops would be landed early in August to help hold back the German armies. Her remarks in this particular respect are really the only matters of military importance in the book. Descriptions of surgical cases and the sufferings of wounded men take up fifty per cent of the story of her hospital experience. Unfortunately, she was not a trained nurse, and her experiences therefore net nothing of very much value to the military reader.

As an example of a book not ordinarily to be encountered in

the great mass of war literature, it might be interesting, but it has no value to the military reader, even as a psychological story.

Napoleon at Work. By Colonel Vachée. Translated from the French by Frederick Lees. London: Adam and Charles Black, 1914. Cloth, 8vo, 324 pages, with maps. Price, $2.00.

Of the many volumes treating of Napoleon and of the men who surrounded him, none have touched in so intimate a manner his military life and methods of command. Colonel Vachée is a member of the historical section of the French General Staff and as a result, has been able to draw on the rich stores of Napoleonic literature and writings, filed in the archives of the French War Office.

This volume was written with the intention of preparing students for the "battles of the future," for the war which is now in progress before our eyes. The author has endeavored to show that a careful examination of Napoleon's methods of making war, which are followed by the German General Staff, will be of the greatest utility to officers of the French army.

He brings us into intimate touch with the Emperor at his headquarters, on the march, and on the battlefield. As a historian, he is logical in marshaling his facts, and from the standpoint of a military man, he draws interesting conclusions. The Emperor's decision was brought about by deep meditation and study of the subject, and he had a few simple directing principles which were the axes of his active brain.

Where did he get such strong hold over his officers and men, and how did he obtain and keep this influence? These questions are carefully answered by Colonel Vachée in the chapters on "Rewards and Penalties." In Napoleon's opinion, there were but two levers by which men could be moved: "fear and interest." This rule he applied in all cases, and beneath every good action or feeling, he sought to discover personal interest. Today when millions of men are engaged on enormous fronts, we are led to wonder whether or not the methods of higher leading as employed by Napoleon will give decisive results. The answer is given in Napoleon's own words:

> The most difficult thing is to discover the enemy's plans and to detect the truth in all reports one receives; the remainder only requires common sense . . . The reason why I have won so

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many battles is this, that *on the eve of the fight* instead of giving an order to diverge, I converged all my forces on the point I wished to force and massed them there. I overthrew that which was before me, for it was naturally a weak point.

In reading this book, one frequently asks whether or not this method is applicable today, and whether we must not have a strong military personality in supreme command in order to apply it. In this respect, Colonel Vachée has taken issue with the methods employed at the Royal Headquarters in 1870-71. He draws on General Verdy de Vernois's interesting story of the work during this campaign to show the French and German methods.

In handling the great masses of the warfare of today, personality may count much in the case of the brigade and division commanders, but can there be very much control exercised by the supreme commander when he is many miles to the rear?

Results have been gotten, as we all know, by the method of "conferences" described by the author. The successes in Poland, Courland, and Galicia are too well known to cause discussion. However, we had perhaps better let events speak for themselves, noting the principle that the leader must make "his influence felt by means of a regulating action on his immediate subordinates, the commanders of the armies, and not by a direct intervention in the vicissitudes of the fight, thus differing from what we saw Napoleon do at Jena in 1806."

With the German Armies in the West. By Sven Hedin. Translated from the Swedish by H. G. de Walterstorff. New York: John Lane and Co., 1915. Cloth, 402 pages, with illustrations and maps. Price, $3.50.

Dr. Sven Hedin was commissioned by special permission of the German Emperor to visit and observe the German armies in Belgium and France with a view to writing about them. His observations cover the period from the middle of September to the second week in November, 1914. The result is a large book which will occupy many hours in the reading. Happily, it has been condensed effectively, if somewhat ironically, into a volume of about a hundred pages,[1] which takes but an hour to read. One can thus get the gist of the larger volume without the necessity of wading through page after page of inconsequential detail, such as the full name and rank of all the princes, generals, and subalterns with whom the author dined night after night at the various places visited. From the frequency with which the fact is mentioned, it seems to have been his custom, amounting almost to a habit, to dine each evening, and he seldoms fails to give the menu. If there is a shortage of rations in Germany, the effects certainly had not extended to the army headquarters visited by Dr. Hedin.

The author has undoubtedly made a name as an explorer, but

[1] In Gentlest Germany. By Hun Svedend. Translated from the Svengalese by E. V. Lucas. Illustrated by Geo. Morrow. New York: John Lane Company, 1915. Cloth, 12mo., 109 pages. Price, 50 cents.

as a military observer, he can hardly be called a success. One cannot fail to be amused by the startling statement that—

> Here were a few Landsturm soldiers sitting in a circle peeling potatoes which are afterwards to be cooked in a bucket over a coal fire. . . . Another little coterie is sipping coffee beside a kitchen wagon. . . . Four Bavarian Landsturm men are lazily blowing smoke out of their enormous pipes.

These interesting occupations, moreover, are not evidences of indifference to the enemy but take place miles behind the firing line. In another chapter, we are told that "after the funeral the grave was filled with earth."

It is difficult to review a book of this kind and still do it full justice. The author clearly intends to be fair, but his prejudice is so marked as to cause him naïvely to refer to the shelling of Ostend after its occupation by the Germans as "consummate impudence" on the part of English torpedo boats. He also prefaces his comments with the statement that he has only set down as facts incidents which he actually witnessed, and yet

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constantly asserts that the destruction of Belgian villages was due to retaliation for the firing from houses by civilians, which he does not pretend to have seen and could only have known of from hearsay weeks after the event, when he visited the ruined towns.

Dr. Hedin undoubtedly had exceptional opportunities to see the German army on the western front, and many of his comments are interesting, when separated from the mass of detail which encumbers the book. The account of the efforts of a German battery to conceal its whereabouts from a French aviator who was circling above in an attempt to locate the batttery, is of the sort that makes the book worth while. No movement of men or matériel was permitted except when the aviator's circling resulted in his back being turned to the battery. All motors, wagons, and other vehicles were covered with green boughs so as to offer as little clue to their presence as possible to the aerial observers. The illustrations, of which there are many, are excellent, and are among the most entertaining features of the book to a military man.

One really ought, however, to read "In Gentlest Germany," where whole sentences in their original form fit into the parody without any suggestion of belonging to the original and are interspersed with witty comment. Space will permit of but one quotation:

> It is wonderful how well the Germans drive. They hold the steering wheel with two hands and move it from left to right, according to the direction desired. Meanwhile the wheels of their capable cars go round. In fact, the efficiency of this people astounds me more every moment.

Φ

The Military Unpreparedness of the United States. By Frederick Louis Huidekoper. New York: The Macmillan Company, 1915. Cloth, medium 8vo, 735 pages, including charts, notes and index. Price, $4.00.

This book is based upon the same principles as the work of General Upton, now well known to our Army, but entirely rewritten, corrected, and brought down to June, 1915, thus embracing all of our military history and policy since 1862, which was not covered by Upton. We give herewith a list of chapters which will serve to indicate the monumental character of what is des-

tined to become the standard authority on our military policy, reserving for our next issue a more detailed review of the work.

CONTENTS OF CHAPTERS.

I. Colonial Period; II. The War of the Revolution; III. Lessons of the Revolution; IV. Military Policy of the United States from the end of the Revolution until the beginning of the War of 1812; V. The War of 1812; VI. Military Policy from the close of the War of 1812 to the beginning of the Mexican War; VII. Military Policy during the Mexican War; VIII. Military Policy from the Mexican War to the War of the Rebellion; IX. Military Unpreparedness and Policy of the United States during the War of the Rebellion; X. Military Legislation and Events in 1862; XI. Military Legislation and Events during 1863; XII. Military Legislation and Events during 1864; XIII. Military Legislation and Events during 1865; XIV. Lessons of the War of the Rebellion and its Cost in Men and Money; XV. Military Policy of the United States from the War of the Rebellion to the Spanish-American War; XVI. The Spanish-American War; XVII. Lessons of the Spanish-American War; XVIII. The Philippine War; XIX. The Lessons of the Philippine War; XX. The Lessons of our Past Wars; XXI. Citizen Soldiery; XXII. Military Policy, Legislation and Events from 1902 to June 1, 1915; XXIII. The Condition of the Land Forces of the United States at the beginnng of 1915; XXIV. The Land Forces of the United States as they ought to be organized.

The War With Mexico, 1846–1848. A select bibliography. By Henry E. Haferkorn. Privately Published, 1914. Cloth, 8vo, 120 pages. Price $1.00.

This is a select bibliograph on the causes, conduct, and political aspect of the Mexican War together with a select list of books and other printed material on the resources, economic conditions, politics, and government of the Republic of Mexico and the characteristics of the Mexican people, so that it is really more extensive than its title indicates, as it covers modern Mexico as well as the war of 1846.

The volume is fully indexed and annotated and bears evidence of having been very carefully compiled by the author, who is librarian at the Engineer School, Washington Barracks.

A Mechanistic View of War and Peace. By Geo. W. Crile. New York: The Macmillan Company, 1915. Cloth demy 8vo, 104 pages. Price $1.25.

Dr. Crile is well known as the head of one of the largest hospitals and medical research laboratories in this country, and anything from his pen will be welcomed as coming from a man who knows whereof he writes. War as the surgeon sees it, is the theme of this book, though Dr. Crile writes more as a psychologist than as a surgeon, and his analysis of the mental attitude of men under fire and in the trenches while awaiting an attack or anticipating an advance is exceedingly interesting. Some of our military writers speak of fear, for instance, as interfering with the proper sighting of the rifle. According to Dr. Crile's theory or "mechanistic explanation," the stimulus of the sight of the enemy is so intense that no other stimulus can obtain possession of the final common path of the brain, the path of action, and the trained soldier goes forward undeterred by any influence short of actual disablement. Wounds are unnoticed, and in fact cause no pain, because pain is inevitably associated with muscular action, and if a bullet or bayonet wound is inflicted at the moment when this injury cannot obtain possession of the final common path, or in telephone parlance "the line is busy," it can excite no muscular action and consequently no pain.

We sometimes try to comprehend the suffering of wounded men on the battlefield. That it is often not as great as commonly supposed is due to the prior exhaustion of the individual which so affects the system that no more muscular action can be excited and pain is impossible. An example is cited by the author:

> We know also that in a state of exhaustion, much less anesthesia is required to confer freedom from pain than is required in a normal unfatigued condition. A remarkable example of the depression of pain in the presence of other more dominant stimuli is the case of a young British sergeant who in a severe engagement while standing near a battery had his leg partially cut off by a shell that failed to explode. He felt no pain, merely a jar, and discovered his injury only when his leg failed to support him. He hopped to a near-by stack of grain and lay down behind it. Here he took out his dull one-bladed knife and completed the amputation, feeling no pain in making the division. An ambulance squad started for him but immediately the enemy fired upon them, killing one. The fire becoming more intense, the

sergeant rolled over and over into a near-by ravine. The enemy advanced so fast, that in his excitement he struggled up and forgetting that his leg was gone threw his weight on the stump. Even then he felt no pain. For several hours he lay there without pain until after the danger had passed and he was removed by the stretcher squad. Then pain took possession of the final common path, and his suffering began.

Dr. Crile does not state with Bernhardi that war is a biological necessity, but he does propound the theory that war is the natural order and peace the unusual—

If we have not heretofore found a means of preventing war, we have at least found that certain things cannot prevent war; we know that our present system of education cannot prevent war; we know that commercial relations, even treaties, cannot prevent war; we know that the burden of debt, bankruptcy, and the resultant grind of poverty cannot prevent war; we know that religion and military systems, and even the fear of wounds and hunger, of suffering and death, cannot prevent war; in short, the very civilization of to-day is itself at war. The civilization of to-day cannot prevent war, because under existing conditions war is inevitable; because it is the normal result of the action patterns created by the mold in which had been formed the present generation of men.

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Schwartz, George J., Lieutenant, 3d Infantry, Pennsylvania National Guard.

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Annual Meeting—Election of Officers.

The Annual Meeting of the Infantry Association will be held at the office in the Union Trust Building at 5 p. m., Thursday, December 16, 1915. The election of officers will be held, and all ballots must be received by that time in order to be counted.

It is considered desirable that one member of the Council should be from each of the branches of Fort Leavenworth and West Point, and that the other members of the Council be selected from among the officers stationed in or near Washington, so that a quorum may easily be called for the transaction of business.

All regular members of the Association are entitled to vote for the election of officers, and may vote for any individual they desire.

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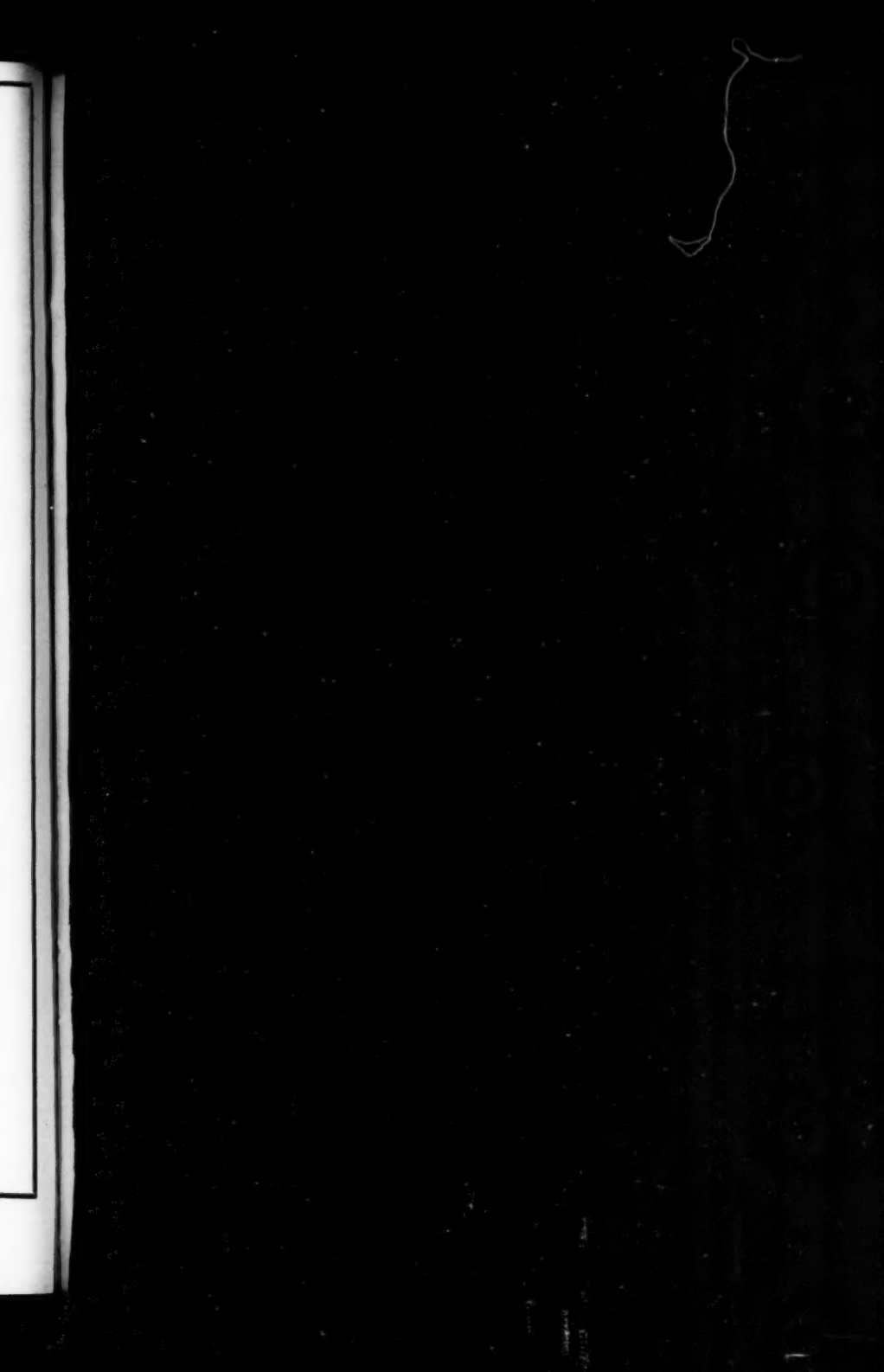
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